



63122/8

The Library of the
Wellcome Institute for
the History of Medicine

MEDICAL SOCIETY
OF
LONDON
DEPOSIT

Accession Number

Press Mark

ROWLEY, W.

Pt. Huli.

1544

XVI₃

R. J. ...
A Surgeon
T R E A T I S E

ON

ONE HUNDRED AND EIGHTEEN
PRINCIPAL DISEASES

OF THE

EYES AND EYELIDS, &c.

IN WHICH ARE COMMUNICATED

SEVERAL NEW DISCOVERIES

RELATIVE TO THE

CURE OF DEFECTS IN VISION;

WITH MANY

ORIGINAL PRESCRIPTIONS.

BY

WILLIAM ROWLEY, M. D.

MEMBER of the UNIVERSITY of OXFORD, the ROYAL
COLLEGE of PHYSICIANS in LONDON, &c.

TO WHICH ARE ADDED,

DIRECTIONS IN THE CHOICE OF SPECTACLES.

L O N D O N :

Printed for J. WINGRAVE, (late Nourse's) STRAND;
E. NEWBERRY, Corner of LUDGATE HILL; and
T. HOOKHAM, NEW BOND STREET.

M.DCC.XC.

THE FIRST

OF THE SECOND EDITION

BY THE AUTHOR

IN TWO VOLUMES

THE SECOND VOLUME

OF THE SECOND EDITION

BY THE AUTHOR

IN TWO VOLUMES

THE SECOND VOLUME

OF THE SECOND EDITION

BY THE AUTHOR

IN TWO VOLUMES

THE SECOND VOLUME

OF THE SECOND EDITION

BY THE AUTHOR

IN TWO VOLUMES

THE SECOND VOLUME

OF THE SECOND EDITION

BY THE AUTHOR

INTRODUCTION.



THE subsequent work is a continuation of those improvements that commenced above twenty years ago, and were published under the titles, first, of an Essay, and afterwards as a Treatise, on the principal Diseases of the Eyes.

In those publications the treatment of the complaints in vision was demonstrated to be very defective, owing to the deceptive pretensions of itinerant oculists, and the neglect of regular practitioners. The errors, though perceived, were not effectually removed, and the defects, though obvious, were but partially supplied, in those first efforts of professional improvement.

The management of the inflammation of the eyes, on rational principles, was theoretically explained, and exemplified by practical facts; and the removal of partial or total blindness from *specks* or *opacities* in the cornea was considerably improved: yet these attempts were too confined to be of very extensive utility.

A longer experience and numerous opportunities of examining eye diseases brought conviction of the necessity and probable utility of the present Treatise, which has received advantages not only from the speculations on a multitude of practical facts, but likewise from an examination of the most accurate modern writers on these subjects; for I agree with the sensible *Janin* when he says, *La partie de l'œil, quoique*

bornée, présente une riche moisson, pour occuper long-temps nombre d'observateurs.

All the observations I have been able to collect, and all the prescriptions I have successfully used, are introduced. The disorders of the eyelids, eyes, their coats and humors, in all amounting to one hundred and eighteen, are not only distinctly described, as *genera*, but likewise their varieties, amounting to many hundreds, which may be considered as *species*.

In this third edition I have omitted many cases and observations that composed the former editions, and the work is arranged according to the anatomy of the parts, beginning with the external and obvious, and proceeding to the internal and more obscure. In short, all the operations and internal medical treatment are exhibited in a new point of view.

In the first and second edition of diseases of the organ of vision were many objections to the common modes of treatment. *Emptying* the vessels, and not suffering them to be *filled again* until the inflammation subsided, were then strongly inculcated; but now, with greater certainty, may the extreme abstinence from drinks be repeated; for thousands have benefited by this new invention, which is directly contrary to the *Boerhaavian* practice of diluting.

The former objections to the application of *powders, ointments, poultices, and improper washes or lotions* to the eyes in a state of inflammation, and to the absurd and cruel method of blowing *powdered glass* into the eyes in obscurities or specks of the cornea, or the application of *corrosives* to the whole surface of the eye when only a small portion was diseased, are now proved to have been founded in reason, and confirmed by experience.

In the medical treatment, including diet and medicines, numerous prescriptions are introduced to cure several diseases without operations. So many instances of the efficacy
of

INTRODUCTION.

of these remedies have been already exhibited in restoring sight to the partially or totally blind, for a period of twenty years, that it is hoped the internal treatment will have a long and candid trial before practitioners proceed to operations, which should never be determined on whilst the least hopes remain of removing disorders, or recovering sight by gentler methods. I speak now of the *fistula lachrymalis*, *opacities of the cornea*, *incipient cataract*, and various other eye diseases, for which the very internal remedies and extreme *dry diet* I have used with extraordinary success are freely communicated. The major part of the practice may appear new, and that is sufficient, amongst those who are firmly attached to old prejudices, to prevent society reaping any advantages from these discoveries; and it is shocking to reflect, that men of the first eminence and reputation for abilities have eagerly decried what they would not be at the pains to comprehend.

In the operation for the cataract, it is presumed, there will be found some improvements worthy of the surgeon's attention. It should be observed, that I formerly operated in the cataract, &c., being a practising surgeon; therefore neither in treating of operations, nor in the other parts of this work, are the opinions of other writers so much followed as my own experience and reflections, either collected from what I have seen at most of the hospitals in Europe, or from the extensive practice that has come under my immediate inspection, having had my house open for the indigent for many years. Several more irrational methods had been adopted in the treatment of eye diseases than those enumerated: some have been superstitiously esteemed for their antiquity; others for their novelty. But as attempts to improve may be more beneficial than the most elaborate, though just, censures, the delivering what has proved useful is preferred to swelling the magnitude or exposure of former errors. The following specimen, therefore, is left to be improved by others, whose studies and humanity may
be

direct them to consider with candor what has been the product of laborious research and experiment.

In this edition, as some parts of the work might appear obscure without the reader could refer to the anatomy of the eye, it has been thought expedient to precede the doctrines by a short view of the organ of vision, in which utility has been more considered than a minute investigation; for whoever would wish to comprehend the subject more accurately may consult either the anatomical part of my *Schola Medicinæ*, where plates from engravings are given, or any other book containing a more elaborate description.

A BRIEF EXPLANATION OF THE ANATOMY OF THE EYE.

THE parts which constitute the eye are divided into external and internal.

The external Parts.

I. The *eyebrows*, or *supercilia*, which form arches of hair above the orbit, at the lower part of the forehead: their use is to prevent the sweat falling into the eyes, and for moderating the light above.

II. The *eyelashes*, or *cilia*, are the short hairs that grow on the margin of the eyelids: they keep external bodies out of the eyes, and moderate the influx of light.

III. The *eyelids*, or *palpebræ*, of which one is superior or upper, and the other inferior or under: where they join outwardly, it is called the external canthus; inwardly, towards the nose, the internal canthus: they cover and defend the eyes.

The *margin* of the eyelids, which is cartilaginous, and is called *tarsus*.

In the *tarsus*, and internal surface of the eyelids, small glands are situated, called *glandulæ Meibomianæ*, because
Meibomius

Meiobomius discovered them : they secrete an oily, mucilaginous fluid, which prevents the attrition of the eyes and eyelids, and facilitates their motions.

IV. The *lachrymal glands*, or *glandulæ lachrymales*, which are placed in the external canthus, or corner of the eyes, in a little fovea of the os frontis.

From these glands six or more canals issue, which are called *lachrymal ducts*, or *ductus lachrymales*, and they open in the internal superficies of the upper eyelid.

V. The *lachrymal caruncle*, or *caruncula lachrymalis*, which is situated in the internal angle or canthus of the eyelids.

VI. *Puncta lachrymalia*, are two callous orifices or openings, which open in the internal angle of the tarsus of the eyelids; the one in the superior, the other in the inferior eyelid.

VII. The *lachrymal ducts*, *canals*, or *canales lachrymales*, are two small canals, which proceed from the lachrymal points into the lachrymal sac.

VIII. The *lachrymal sac*, or *saccus lachrymalis*, is a membranous sac, which is situated in the internal canthus of the eye.

IX. The *nasal duct*, or *ductus nasalis*, is a membranous canal, which goes from the inferior part of the lachrymal sac through a bony canal below, and a little behind, into the cavity of the nose, and opens under the inferior spongy bone into the nostrils.

X. The *conjunctive membrane*, or *membrana conjunctiva*, which, from its white color, is called *albuginea*, or white of the eye, is a membrane which lines the internal superficies of the eyelids, and covers the whole fore part of the globe of the eye : it is very vascular, as may be seen in inflammations.

The bulb or globe of the eye is composed of

Eight membranes or coverings ;

Two chambers or *camerae* ; and

Three humors, improperly so called.

The membranes of the bulb or globe of the eye are :

Four in the hinder or posterior part of the bulb or globe.

1. *Sclerotica*.

2. *Choroidea*.

3. *Retina*.

4. *Hyaloides*, or *arachnoidea*.

Four in the fore or anterior part of the bulb.

5. *Cornea transparens*, or *transparent cornea*.

6. *Iris*.

7. *Uvea*.

8. *Capsula*.

1. *Membrana sclerotica*, or the sclerotic or horny membrane, which is the outermost, begins from the optic nerve, forms the spherical or globular cavity, and terminates in the circular margin of the transparent cornea.

The anterior part of the sclerotica is pellucid or transparent, and is called *cornea transparens*, or the transparent cornea.

2. *Membrana choroidea*, or *choroides*, is the middle tunic of the bulb, of a black color, beginning from the optic nerve, and covering the internal superficies of the *sclerotica* to the margin of the transparent cornea.

In this place it secedes from the cornea, and deflects transversely and inwardly, and in the middle forms a round perforated foramen. This circular membrane of the *choroidea* in the anterior superficies is called *iris*, in the posterior superficies *uvea*.

The round opening in the center is called the *pupil* or *pupilla*. This foramen or round opening can be dilated or contracted by the moving powers of almost invisible muscular fibres.

3. *Membrana*

3. *Membrana retina*, is the most inward tunic, of a white color, and similar to mucus; being an expansion of the optic nerve, chiefly composed of its medullary part. It covers the inward superficies of the choroides to the margin of the crystalline lens, and there terminates.

The chambers or *camerae* of the eyes are :

1. *Camera anterior*, or fore chamber, is an open space, which is formed anteriorly by the hollow superficies of the *cornea transparent*, and posteriorly by the superficies of the *iris*.

2. *Camera posterior*, is that small space which remains anteriorly from the *tunica, uvea*; and *pupilla*, or pupil, posteriorly from the anterior superficies of the crystalline lens.

Both these chambers are filled with aqueous humor.

The humors of the eye, as they are called, are, in number, three :

1. The *aqueous humor*, which fills both chambers.

2. The *crystalline lens*, or humor; is a pellucid body, about the size of a lentil, which is included in an exceeding fine membrane or *capsula*; and lodged in a concave fovea of the *vitreous humor*.

The membrane which closely surrounds the lens is called the *capsula* of the crystalline lens.

3. The *vitreous humor*, is a pellucid, beautifully transparent substance; which fills the whole bulb of the eye behind the crystalline lens. Its external superficies is surrounded with a most pellucid membrane, which is called *membrana hyaloidea*, or *arachnoidea*. In the anterior part is a fovea or bed for the crystalline lens, in which the lens is seated.

The *connection* of the bulb is made, anteriorly, by means of the conjunctive membrane with the inner surface of the eyelids or *palpebrae*; posteriorly, by the adhesion of six muscles of the bulb and the optic nerve, with the orbit.

The optic nerve, or *nervus opticus*, perforates the hinder part of the sclerotica and choroides, and then constitutes the *retina* by spreading itself on the whole posterior superficies of the internal globe of the eye.

The muscles by which the eye is moved in the orbit are six; much adeps furrounds them, and fills up the cavities in which the eyes are seated.

The *use of the eye*. It is the organ of vision.

The pellucidity or brilliant clearness of the eye is very much dependent on the transparency of the cornea, aqueous, crystalline, and vitreous humors, the capsula of the lens, and *membrana hyaloidea*; for if any of these be in the least cloudy or impervious to the passage of the rays of light, vision is always more or less impeded.

Externally the globe of the eye and the transparent cornea are moistened with a most limpid fluid, called *lachrymæ*, or tears; the same pellucid subtile fluid exactly fills all the pores of the transparent cornea: for, deprived of this fluid, and being exposed to air, that coat of the eye becomes dry, shrivelled, and cloudy, impeding the rays of light.

After death this subtile limpid fluid transudes through the pores of the *cornea transparens*: hence flaccidity and cloudiness.

The parts destined to secrete the tears, and convey the superfluity into the nostrils, are contained in Plate I.

PLATE I.

Fig.1.

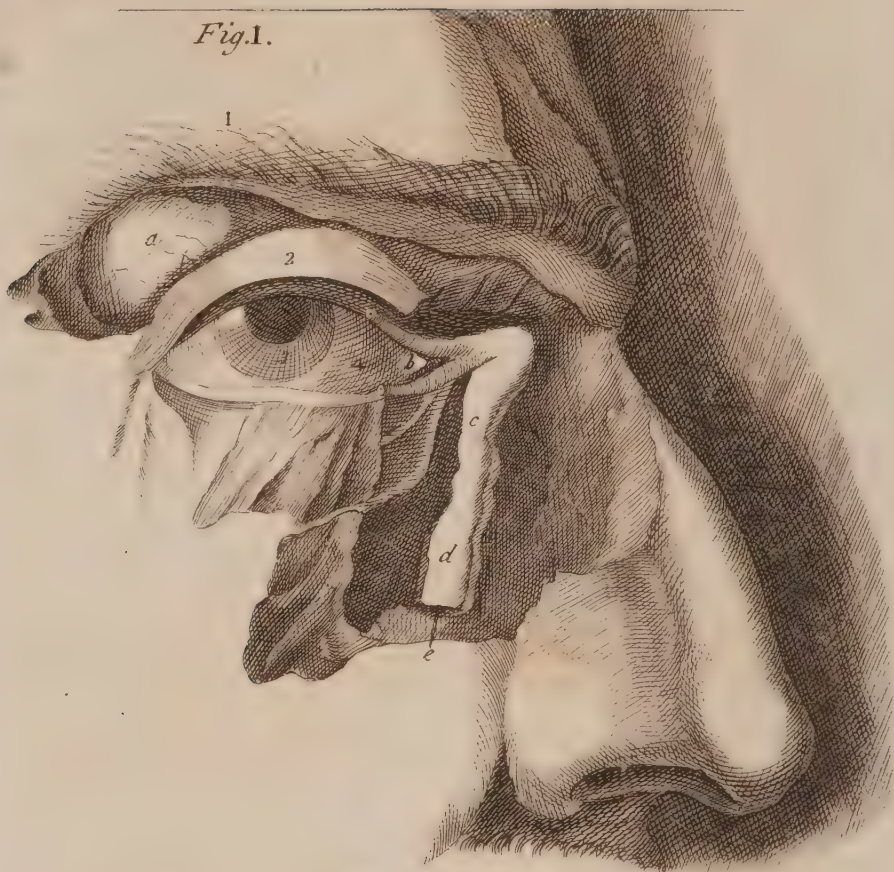


Fig.II.



Fig.III.

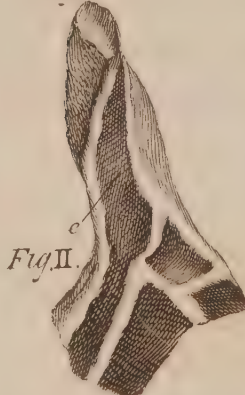


Fig.IV.

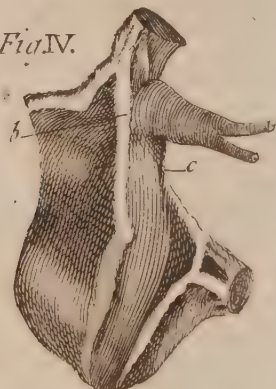


Fig.V.



Fig.VI.

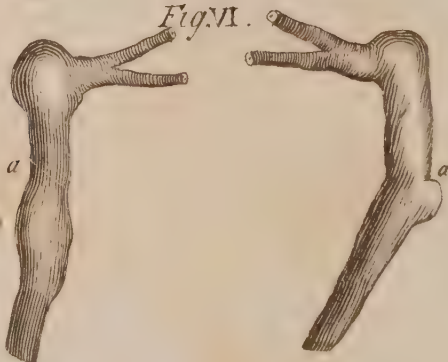


PLATE I.

FIGURE I.

The principal external parts of the organ of vision, and lachrymal gland, duct, &c.

1. Supercilia, or eyebrows.—2. The palpebræ, or eyelids.—3. The transparent cornea.—4. The *tunica albuginea*, or conjunctive membrane.—5. The tarsus, or margin of the eyelids, on which are *cilia*, or eyelashes.

Several bones are destroyed in order to expose to view the whole organ for secreting the tears in its proper situation.

- a. The lachrymal gland, which secretes the tears.
- b. The lachrymal caruncle, or *caruncula lachrymalis*.
- c. The lachrymal duct made narrower, in one part, by a ligamentary girt.
- d. The excretory duct of the tears in its natural situation.
- e. The inferior opening of the lachrymal duct into the nose.

FIGURE II.

The exterior organ of the tears of the right side detached.

- a. The lachrymal points, or *puncta lachrymalia*, one opens in the upper, and the other in the under corner of the eyelid, and absorb the superfluous tears.
- b. The *saccus lachrymalis*, or lachrymal sac, which receives the superfluous tears.
- c. The lachrymal canal or duct, which conveys the tears into the nose.
- d. The interior orifice of the duct which opens into the nose.

FIGURE III.

- e. The bony or osseous receptacle for the lachrymal duct in front, and a little on the side for the better view of the cavity.

FIGURE IV.

- a. The internal posterior view of the same organ fixed in its situation.

FIGURE V.

- b. Its osseous receptacle separated.
- c. The place of the ligamentous girt or band in Fig. IV.

FIGURE VI.

The same organ as in Figure IV. seen out of its bony receptacle.

FIGURE VI, to the Right.

The same organ viewed on the right side.

- a. a. The girt, or nearly a strangulation of the girt, which may cause obstruction, the *fistula lachrymalis*, &c.

The differences of appearance arise from the parts being dissected from different subjects.

P L A T E II.

FIGURE I.

The lachrymal passages, &c.

- a.* Orifices of Meibomius's glands.
- b.* The semilunar membrane before the lachrymal caruncle.
- c.* Caruncula lachrymalis,
- d. d.* Puncta lachrymalia.
- e. e.* The two canaliculi uniting near the nasal sac,
- f.* Saccus lachrymalis, or lachrymal sac.

FIGURE II.

Glandulæ sebaceæ of Meibomius.

- a.* Tarsus, or margin of the upper eyelid.
- b.* Tarsus of the under eyelid.
- c. c.* Plexus glandulosi, or Meibomius's plexus of glands.

FIGURE III.

The three tunics of the eye removed from the side that the humors may be seen.

- a.* Optic nerve.
- b.* Three tunics turned backwards.
- c.* Vitreous humor.
- d.* CrySTALLINE lens.
- e.* Retina, subject to the vitreous humor.
- f.* The anterior termination of the retina,
- g.* The striated posterior part of the corpus ciliaris.
- h.* Plicæ, or folds of the ciliary processes appearing like white rays.
- i.* The place where on both sides of the lens white radii or rays appear distant from the lens.
- k.* The pupil, conspicuous by the pellucid lens.

PLATE II.

Fig. I.

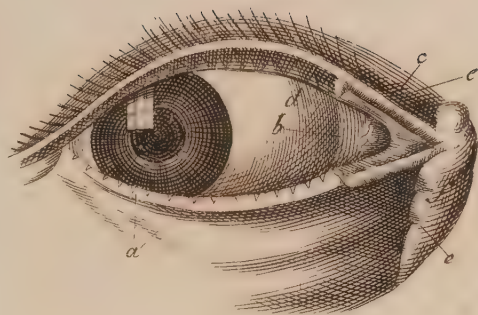


Fig. II.



Fig. V.



Fig. III.

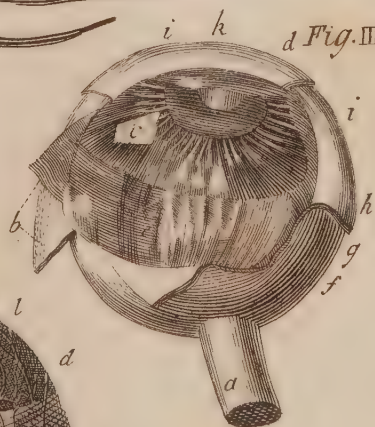


Fig. IV.



FIGURE IV.

The long and short ciliary arteries, the circle of the iris, &c.

- a. Sclerotica turned backwards,
- b. b. Two long arteriolæ ciliares.
- c. c. The branches of two longer, divaricated.
- d. d. d. Smaller branches arising from both branches, bifurcated, and going to the internal circle,
- e. e. Interior circle.
- f. The same duplex, or double in some places.
- g. g. g. The anterior ciliary arteriolæ, or small arteries, infected in the circle.
- h. h. h. *Arteriæ ciliares breves*, or short ciliary arteries.
- i. i. i. The union between them by anastomosis behind the ciliary orb.
- k. k. *Surculi* going from thence into the circle of the iris,
- l. l. Minute arteries of the iris.
- m. m. *Arcus*, or arches, which join themselves about the smaller ring of the iris.
- n. *Surculi* from those arches tending towards the pupil:

FIGURE V.

The *reticulated* appearance of the choroides very much magnified by the microscope.

P L A T E I I I.

FIGURE I.

The ciliary nerves and fabric of the iris.

- a.* The optic nerve.
- b.* Sclerotica reflexed.
- c.* Ciliary *nervuli*, some larger, anteriorly, divided into branches.
- d.* Other small nerves, or *nervuli*, scarcely branched.
- e. e.* Two larger venous vessels, faintly expressed.
- f.* Foramen in the sclerotica which hath passed through a venous vessel.
- g.* A small venous vessel.
- h.* The ciliary orbit.
- i.* The greater ring of the iris.
- k.* Parallel serpentine fibres of the iris.
- l.* Larger fibres joining themselves together through the arch, of which many form the smaller circle of the iris.
- m.* The interior smaller ring of the iris.
- n.* Right lined fibres tending from the convexity of the arches to the pupil.
- o.* The pupil.

FIGURE II.

The minute veins or venulæ of the choroidis and iris.

- a.* The vagina of the optic nerve cut through and turned back.
- b.* The optic nerve.
- c.* The central vein running down in the superficies of the nerve, and demerging itself into the substance of the nerve, near the eye.
- d. d. d. d.* The four angles of the sclerotica reflexed.
- e. e. e.* Angle of the cornea.

f. f. f.

PLATE III.

Fig. I.

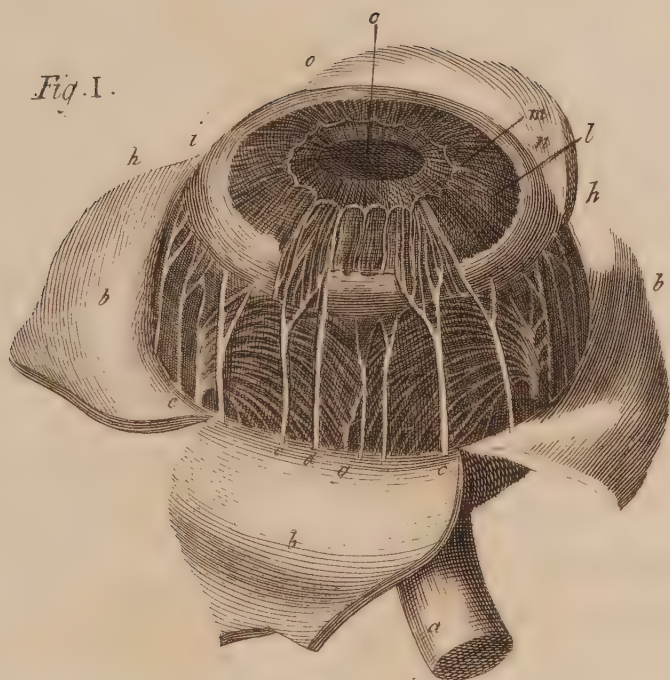
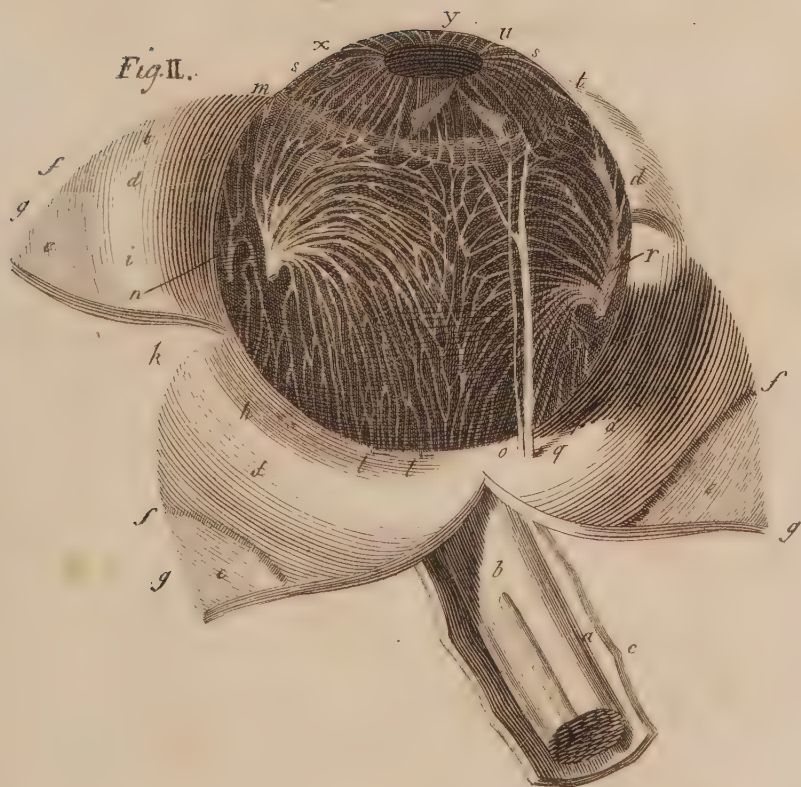


Fig. II.



- f. f. f.* The black circle which distinguishes the cornea from the sclerotica.
- g. g. g.* *Foraminula*, or small openings near the cornea for the passage of anterior *ciliary arteries* and *veins*.
- h.* A large foraminulum for the vorticosè vessel.
- i. i.* Two larger vorticosè vessels from the other side, and divided into many small branches.
- k.* Ramuli going behind, of which some occur.
- l. l.* The posterior ciliary veins perforating the sclerotica near the insertion of the optic nerve.
- m.* The anterior *ramuli*, or small branches going to the iris.
- n.* A less vorticosè vessel.
- o.* The accessory intermediate *venula* joined with both vorticosè vessels, and divided into many small branches.
- p.* The long ciliary *venula*.
- q.* The ciliary nerve always accompanying the long *venula*.
- r.* Two *ramuli*, in which the ciliary long vein is divaricated under the cellofitaty of the orbicular ciliary vein.
- s. s.* Three anterior ciliary veins cut off.
- t. t.* The lateral *ramuli*, in which the *venulae*, from the choroides passing into the iris, communicate one with another.
- u.* The serpentine parallel *venula* of the iris.
- x.* The anterior lamella of the iris reflexed.
- v.* The pupil.

P L A T E IV.

FIGURE I.

Muscles of the globe of the eye destined to move the eye in its orbit without the *levator palpebræ*.

- a.* Bulb of the eye.
- b.* The optic nerve within the orbit.
- c.* The optic nerve on the outside of the orbit.
- d.* A portion of the dura mater which goes into the periorbitum.
- e.* The *levator palpebræ* cut off from nearly its origin.
- f.* The *musculus obliquus superior* inflected through the trochlea.
- g.* *Musculus attollens*.
- h.* The tendon of that muscle dilated near its insertion.
- i.* *Musculus adducens*.
- k.* Both muscles just mentioned connected together near their origin, that it may be shewn that the *levator palpebræ* does not belong, in its origin, to the vagina of the optic nerve, but is placed on both muscles.
- l.* *Musculus deprimens*.
- m.* *Musculus abducens*.
- n.* The superior head connected with the *attollens*.
- o.* The inferior head.
- p.* The interval interposed to both heads of those muscles.

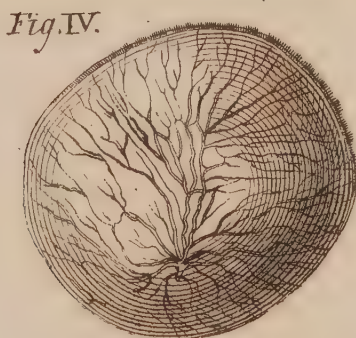
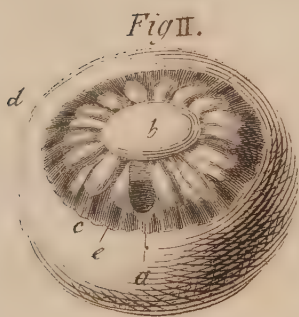
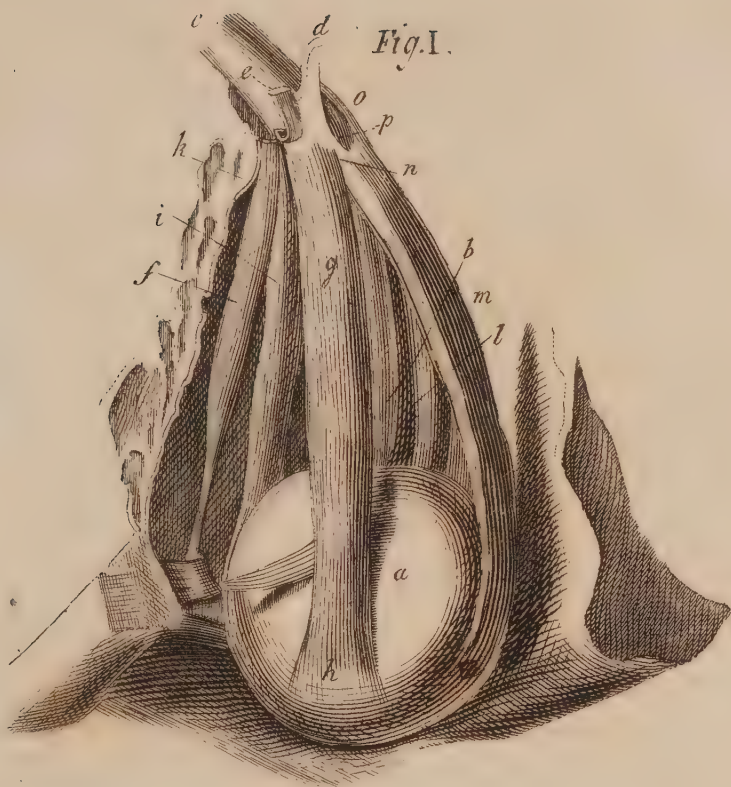
FIGURE II.

Membranula of the *corona ciliaris*, by the means of which the crystalline lens is joined with the vitreous humor, and Petit's canal swelled by inflation.

- a.* Vitreous humor.
- b.* Crystalline lens.

c. *Annulus*

PLATE IV.



- c. *Annulus ferratus*, or the ferrated ring conflated, from the nigrum pigmentum lying on the anterior part of the vitreous humor and *corona ciliaris*.
- d. *Bullulæ*, or bubbles, in which the membranula of the *corona ciliaris* is elevated by the emission of air.
- e. The little wound by which the air was emitted.

FIGURE III. IV.

The artery of the capsula of the crystalline lens conspicuous in the posterior surface, in Figure III. of the natural size, but in Figure IV. greatly augmented by a microscope.

FIGURE V. VI. VII.

Three figures of the crystalline lens from the human body, of various ages: Figure V. from an infant recently born; Figure VI. from a child of four years old; Figure VII. from an adult of twenty years of age, which shews that the lens is more convex the nearer man is to his origin.

FIGURE VIII.

The *crystalline lens*, which being macerated, begins to open into triangular scales or squamous appearances, descriptive of its real structure.

THE PHYSIOLOGY OF THE EYE BRIEFLY EXPLAINED.

VISION is that sensation by which we perceive the bodies surrounding us, and their visible qualities.

The organ of vision is the *membrana retina* of the optic nerve, or, according to some, the *choroides*.

The objects of vision are, the rays of light emanating from a lucid or illuminated body, and falling through the bulb of the eye on the *retina*.

Light is a most subtile matter, which emanates either from the sun, or any other lucid body, by a most rapid motion, and in straight or direct lines, which are called the *rays of light*, penetrating our eyes.

The structure of the parts destined to vision, and the impressions this sense makes on the mind, are innumerable.

The organ of vision is a prodigy of *dioptrics* *, which the most consummate art cannot imitate.

Light is its object, which is a most subtile matter universally expanded through the whole universe.

Experiments prove light to be more fine, subtile, and softer than fire †.

It has a motion, and vibrates in direct lines: these vibrations are excited by the sun, stars, or any luminous body.

The sun, however, is acknowledged to be the most powerful mover of light.

The propagation of light is, by several degrees, quicker than sound; it is seven or eight minutes in arriving to us from the sun: it passes, therefore, *four millions* of leagues in a minute, and *seven hundred thousand leagues* in a second.

* *Dioptrics* treat of the passage of light across transparent bodies.

† See the experiment of M. *De la Hire*.

Sound is propagated only *three hundred and forty-six yards* in a second. The air, therefore, that transmits light is a *thousand times* more subtile and rarefied than that which produces sound.

THE REFLECTION AND REFRACTION OF LIGHT.

The motion of light is in a direct line. It changes the direction of its rays when it meets with a smooth surface, which is called *reflection*, because the light *reflects* or rebounds from this surface as a ball does from a boarded floor.

Light is reflected from these smooth surfaces with the same force and the same inclination with which it falls upon them; the *angle of incidence*, therefore, of the ray and its *angle of reflection* are equal.

The change of direction incident to light that passes from one medium to another is but a turning of the first straight line, which turning is called *refraction*, because in effect the ray thus determined from the first direction appears to be *broken*.

If the surface of a transparent medium be convex into which light enters, as in a *convex lens*, the rays after refraction approach so as to form a point behind the lens. The rays, thus conducted to a point, are called *convergent rays*, but the point itself the *focus* of the lens: after which the rays separating themselves from the point in radiated lines, are nominated *divergent rays*. These are demonstrated in the plates.

SOME PROPERTIES OF LIGHT NECESSARY FOR THE EXPLANATION OF VISION.

i. The rays of light do not pass through opaque bodies, but are *reflected* from them.

ii. The rays of light pass through pellucid or transparent bodies, but in passing are *refracted*.

III. *Pellucid convex bodies* unite together the transmitted rays of light, and form a *focus* behind, by what are called *converging lines*, which, approaching one another, form a point.

IV. *Pellucid concave bodies* disperse the transmitted rays of light into what are called *diverging lines*, or lines which spread from one another,

These descriptions of the parts that form the organ of vision, and the brief explanation of the properties of light, are too contracted to convey a very extensive knowledge on these subjects; but they may be sufficient to give rational causes for the defects of vision, and prove a foundation for erecting a superstructure, at some future period, superior to that which now makes its appearance.

Verbal descriptions, however, are obscure to those who have not studied, or who do not clearly comprehend the structure and uses of the different parts subservient to vision: it was, therefore, thought expedient to illustrate the doctrines contained in this Treatise by exhibiting a few plates of the anatomy of the eye, the theory of vision, and some causes of its principal defects.

Vision, therefore, is performed, whilst,

1. The *rays of light*, emanating from a visible object, run into the *pellucid and convex cornea* of the eye; from the density and convexity of which they unite nearer together.
2. The rays pass the *aqueous humor* and pupil of the *iris*, and in the *crystalline lens* are more concentrated.
3. The rays, thus concentrated, pass to the *vitreous humor*, from thence to the *retina*; in which,
4. The *focus* depicts the inverted image of the external object, which is supposed to be represented or conveyed to the mind by the optic nerve; but by what means is beyond human conception.

The subfidual parts of vision are :

1. The *cilia* and *supercilia*, which divert the descending serum of perspiration from the eyes.

2. The *palpebræ*, or eyelids, which absterge or cleanse the cornea from fordes or dirt, and exclude too much light.

3. *Lachrymæ*, or tears, preserve the pellucidity or transparency of the cornea by their moisture and subtilty.

4. *Pupilla*, or pupil, which is contracted in strong light, and in less light is dilated.

5. *Choroidæa*, or choroides, its *pigmentum nigrum*, or blackish color, which suffocates the focus of vision, lest it should go beyond the retina, &c.

6. *Muscles of the bulb*, which obvert the bulb to the object to be seen.

The *utility of vision*. By the benefit of this sense we see,

1. Surrounding objects.

2. Their magnitude.

3. — figure.

4. — color.

5. — distance.

6. — number.

7. — motion or rest.

8. — situation.

Those who are unacquainted with the anatomy of the eye can only acquire this knowledge perfectly by dissections, which should be repeated on the dead eyes of animals ; but particularly of the human subject, if procurable. A few dissections will impress the mind with completer ideas of the eye, and every other part of the human body, than a thousand written descriptions.

P L A T E V.

Exhibiting the manner in which light pervades the eye, how and where it is *refracted*, in what manner the rays, *converging* form a *point* or *focus* behind the *crystalline lens*, and then *diverging*, paint the image first on the retina, then on the choroides, according to the doctrines advanced by the most excellent authors on vision.

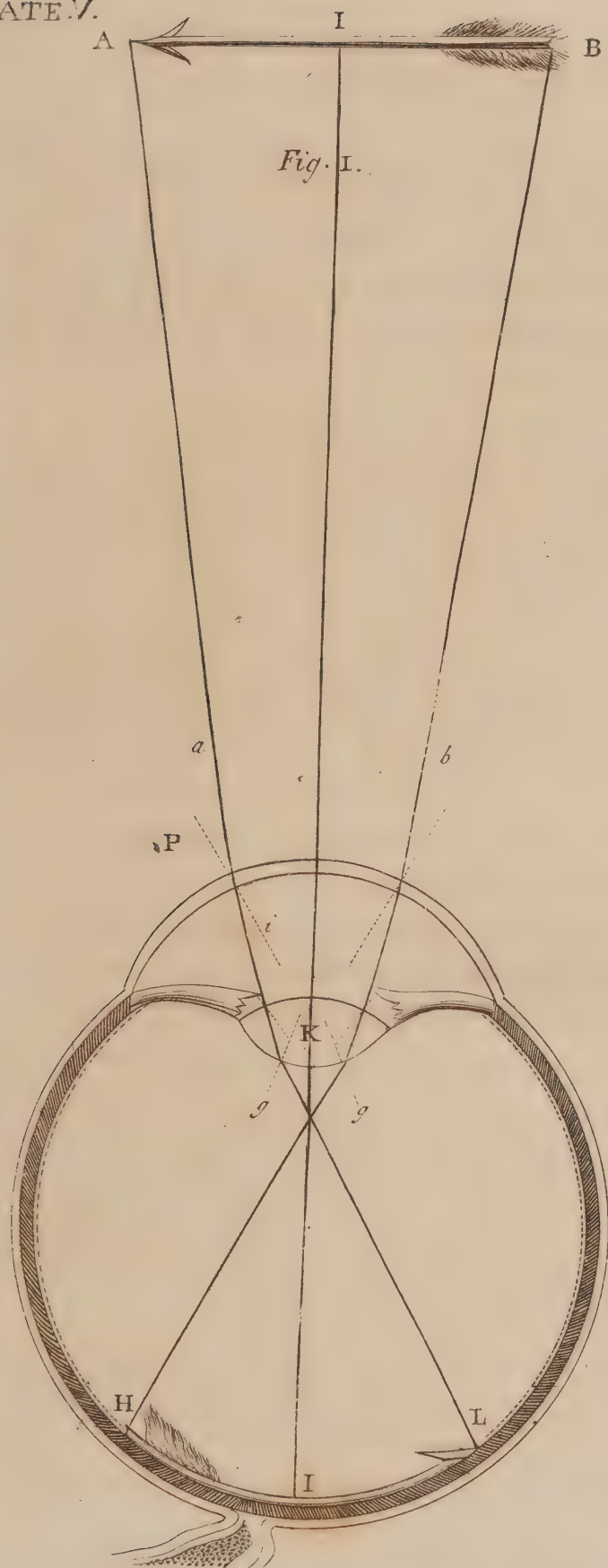
Beyond these principles human intelligence cannot extend; for though the effects of light on the organ of vision can be clearly demonstrated, and how objects are painted on the *retina* or *choroides* in an inverted manner, yet how the impressions of external vision are conveyed by the nervous expansion, called *retina*, to the optic nerve, and from thence to the mind, have hitherto eluded the most industrious researches and inquiries, and perhaps may ever remain incomprehensible.

The reflection and refraction of light, convergent and divergent rays, have been explained; but in Plate V. it is proposed to demonstrate those doctrines.

In this plate, which represents the figure and parts of the eye, an arrow is the object viewed; the lines shew in what direction its figure reflects itself on the organ of vision.

The ray A. a. that darts from the points of the arrow A. B., in passing from air to the transparent cornea and aqueous humor, passes from a less dense medium to one that is more dense: it must, therefore, be refracted in approaching the perpendicular; the inferior ray B. b. does the same. The rays approach one another, and are collected in a less space in order to pass through the pupil.

In piercing the crystalline humor K. the rays are still more compact by the same law. In going from the crystalline humor the rays pass to the vitreous humor, which is a less dense medium, and there ought to be refracted on receding
from



from the perpendiculars *g. g.* ; but receding from these perpendiculars, which have a direction opposite to the former directions, the rays continue to approach each other, and are collected towards the axis of the eye, to the bottom of which they go to convey their impression, *H. I. L.* This impression is made in a reversed direction. The ray *A. a.* falls in *L.* on the opposite side, and the *B. b.* passes on the other side *H.* ; because these cross one another conformably to what is seen in the experiment of the dark chamber. There is only the direct ray *I. K. I.* which regularly follows the visual axis, and is not at all refracted, because it is perpendicular to the cornea, and to the whole globe.

If the experiment of the dark chamber should not carry with it sufficient convictive evidence, take the eye of an ox, its bottom being stripped of the sclerotis and choroides in such a manner that the vitreous humor is only covered by the retina ; place this eye over against two candles ; you will see those candles painted in a reversed order on the retina, and will observe that the candle on the right side falls on the left side of the bottom of the eye ; or if you place one above the other, you will see that the upper candle will be painted on the lower part of the bottom of the eye, and that the lower candle will be painted on the upper part of the same bottom. This fact any one may be easily convinced of by removing successively each candle, in order to take an exact survey of them.

P L A T E VI.

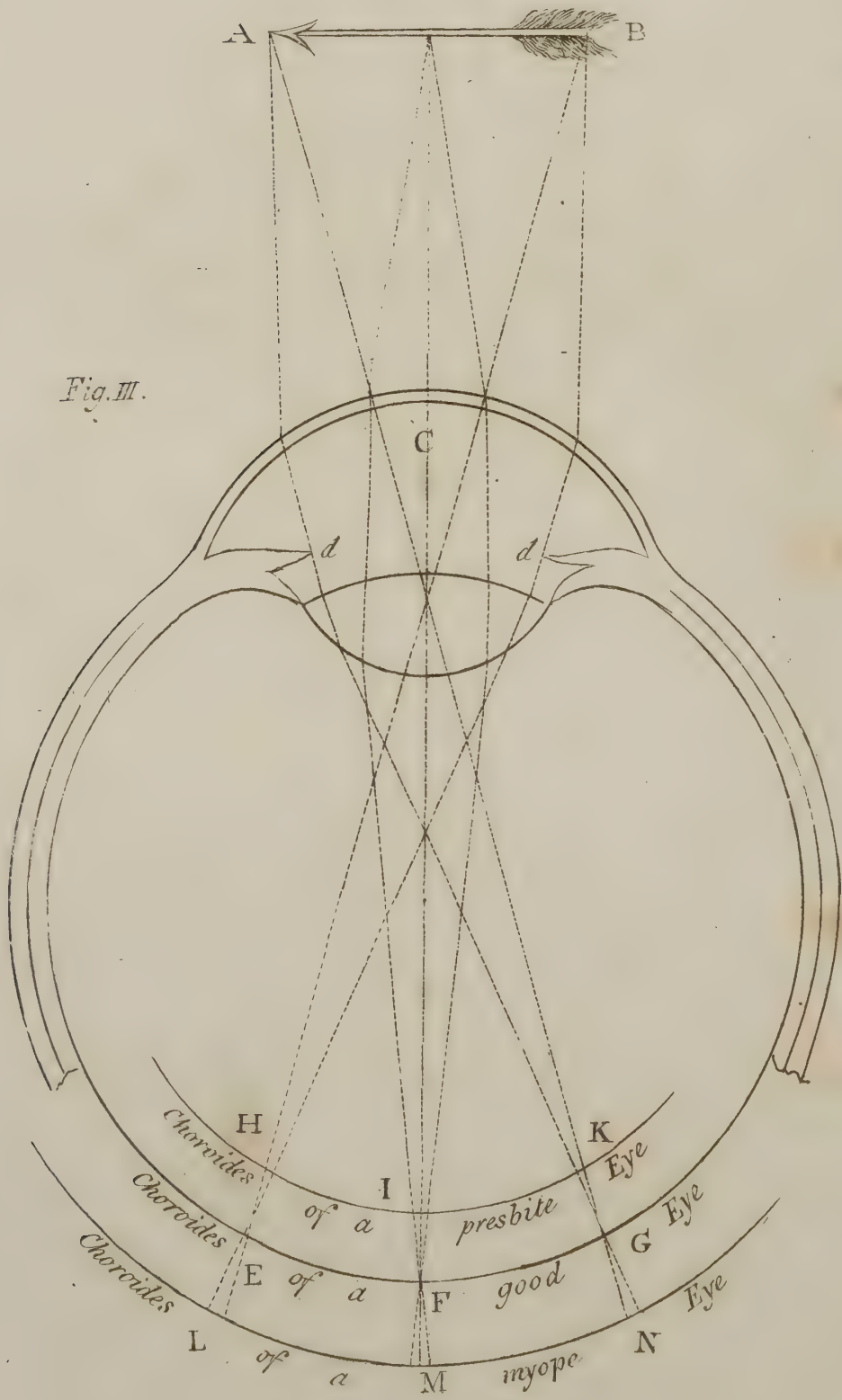
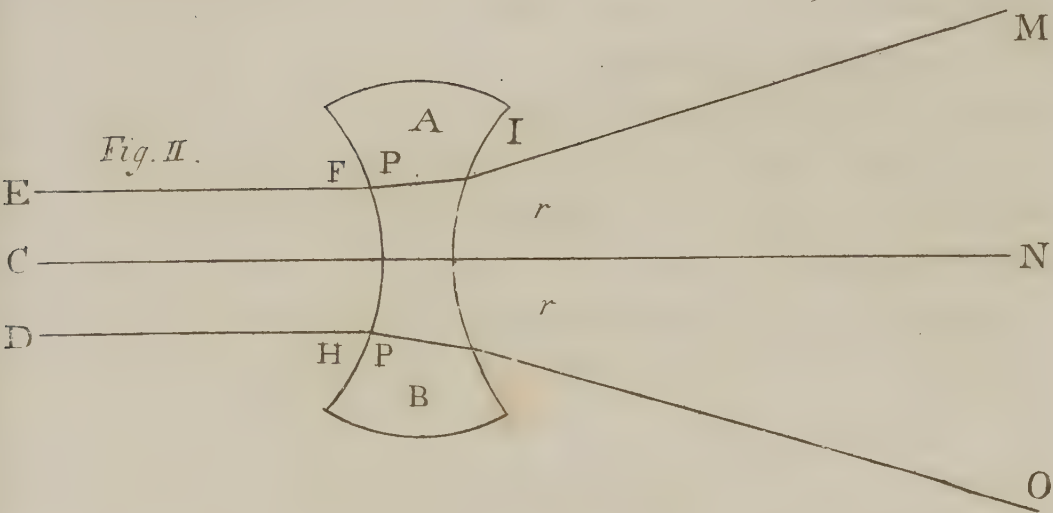
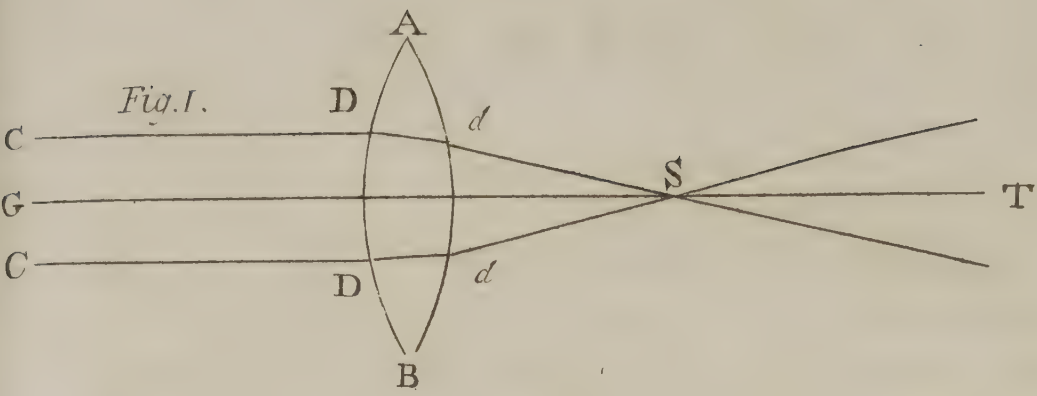
FIGURE I. and II.

If the surface of the medium into which light enters be found convex, as in the lens A. B., Fig. I., then supposing three rays parallel G. C. C., the middle ray G. falling perpendicularly on the medium of the *lens*, will pierce it without being turned from its first direction, and will describe from G. to T. but one straight line; but the collateral rays C. C. falling upon the lateral and sloping parts of the *lens*, become oblique, in respect of the perpendicular of this spot of the surface, marked by the two pointed lines D. D.; so that they are *refracted* on their approaching this perpendicular D. D.

The same rays, on departing from the *lens* into air at the points *d. d.*, pass obliquely from a denser medium to a medium of less density; they must consequently then be broken on their determination from the perpendiculars marked in the plate; so that they would always be approaching the middle ray, to which they would unite themselves at last in a single point S., where they cross one another, and from whence they are separated afresh at T. This point of reunion is called the *focus* of the *lens*, and these rays thus conducted to the same point are termed *convergent rays*; but when they separate themselves again, as at T., they are styled *divergent rays*.

If, on the contrary, the surface of the medium into which light enters be concave either on one side only, or on both, as in the *lens* A. B., Fig. II., then the middle ray C. will cross the *lens* in a direct line C. N., because this ray falls perpendicularly both on the concave surface F. H. of the *lens*, and the convex surface I. L. of the air; but the collateral

PLATE VI



collateral rays E. D. fall obliquely upon one and the other surface, whence they become subject to the laws of refraction.

They enter at the points F. H. into the dense medium. Instead of keeping in a straight line, they must necessarily be *diverged* in approaching to their perpendiculars *p. p.* They depart from the *lens*, or pass into air of less density to the points I. L. There, instead of pursuing again a straight line, they must keep wide of their perpendicular *r. r.*, and go to M. O.; consequently these rays are twice *diverged* from the middle ray, which renders the entire ray *divergent* in a contrary direction to that which passes through the *convex lens*.

It may be observed, that in the one and the other glass, though the ray in entering makes its approaches to the perpendicular, and at its darting away is wide of it, yet notwithstanding it ever continues to approach the middle ray, as in the *convex glass*, or to keep wide of it, as in the *concave*: the reason is, because the perpendicular of its exit from the glass is under contrary directions; so that the ray in its approaches to the former, and its keeping clear of the latter, is always curved in the same manner.

FIGURE III.

This Plate explains the causes of

- I. The *myops*, or near-sighted eye.
- II. The *presbite eye*, or that which sees well only at a distance.
- III. The well-formed eye.

The *myopes*, or those that can only see objects very near, have the *choroides* too far off from the *crystalline lens*, or from the crossing of the rays, either because their transparent cornea projects too much, the crystalline humor is too convex, and too strong a *refraction* makes the rays cross too soon; or else because, with ordinary refraction, their globe of the eye is too big, and too much distended, or the space of the vitreous humor too large. In both these cases the *optic point*, or the distinct formation of the image, is on this side the *choroides*; so that when the image falls on this *choroides*, it is already disconcerted, the pencils are already divergent, as in L. M. N. Fig. III. Plate VI.

These people thrust their eyes almost upon the objects, in order to lengthen the *focus* by this proximity, and make the optic point reach the choroides; they also successfully make use of a *concave glass*, that lengthens the crossing of the rays and the point where the image is distinct: but age, which diminishes abundance of the fluids and flattens the eye, as well as diminishes the fluids contained in other parts, generally corrects this defect.

Those who discern nothing but at a great distance have the *choroides* H. I. K. too near the crossing *d. d.* of the rays, either because they have the transparent cornea or the crystalline humor too little convex, or else the vitreous space too small. If they have the cornea or the crystalline humor too little convex, the refraction is feeble, the crossing
is

is made at too great distance, as in the re-union of the optic pencils; so that the inverted *cone* gains the *choroides* in H. I. K. before the pencils are united, and before the image is distinctly formed, as it is in E. F. G.

Though the refraction and crossing are as usual, yet if the apartment of the vitreous humor be too small, too short, or flattened, the *choroides* will be still on this side the optic point, and will receive no distinct image, unless that of very *distant objects* that have a shorter *focus*, and require precisely a *choroides* near the crystalline lens, as these *presbite* eyes have; a common defect in *old people* from a general *aridity* of parts. This defect is corrected with *convex glasses*, *microscopes*, and a *lens*, which augments the refraction, and renders the crossing of the rays and their *focus* shorter: but this is the sole resource remaining to those who labor under this inconvenience; for the *presbite eye* has not, like the *myope*, the advantage of being amended by age. Time, on the contrary, serves only to render its condition worse.

A *well-formed eye* is, therefore, that wherein the image of objects, at a middle distance, falls distinctly on the *retina* or *choroides* without any violence being offered to the eye, which supposes a regular figure of the parts of the eye: but the best eye is that which adds to this regular conformation the talent of seeing distinctly at all distances, because it has the power of metamorphosing itself into a *myope* or dilated eye when it surveys very near objects, or into a *presbite* or flattened eye when it views objects very remote.

This power the eye is endued with of dilating or contracting itself can only reside in the *muscles* and *ciliary fibres* that surround and move the crystalline humor. The perfect eye, therefore, is expanded to view *near objects*, and flattened to survey those at a distance.

R E M A R K S

ON THE

GENERAL TREATMENT OF THE OPHTHALMIA
AND SOME OTHER COMMON DISEASES OF THE
EYES.

I N these remarks I shall not enter into a minute detail of either the theoretical refinements, or useless distinctions, in the cure of eye diseases, but shall attend to that practice which is in universal esteem in Europe.

The most common remedy in the ophthalmia is bleeding.

Bleeding is certainly a sovereign remedy in the *true inflammatory ophthalmia*, as in all other inflammations ; but to produce good effects we must be profuse in this evacuation ; for no advantages in the cure will be obtained by small bleedings ; however, the quantity ought to be regulated by the habit of the patient and violence of the inflammation. In the *intermittent ophthalmia* bleeding is discovered to be very injurious : it has aggravated and prolonged all the symptoms. This is a *new* observation ; for this species has but lately been known.

The next remedy to be considered is purging.

Purges are of service in the cure, and in some constitutions are absolutely necessary.

To prevent the formation of chyle, or to carry it through the intestinal canal, is of considerable consequence in the cure of inflammations.

Purges, by preventing the chyle from entering the lacteals, and by forcing the aliment quickly through the intestines, greatly contribute to deplete the vessels, and depletion is a principal object in the cure of the ophthalmia. But drastic aloetic purges are highly improper ; for these
acting

acting with violence on the circulating powers, do often quicken the blood's motion, and increase irritation.

Lotions of brandy and water, astringents of the vitriolic kind, sacch. saturn. dissolved, and such like remedies, are constantly prescribed in the cure of the violent ophthalmia, even when recent.

The principal means by which these applications have been introduced into practice, are from the temporary ease which succeed their use; for both physician and patient are often happy if ease be obtained by any means.

A great number of eye waters, to which have been attributed wonderful effects, when we examine their composition, and are not prejudiced by common report in their favor, we shall find them just the contrary of answering any important end in the cure. Some are highly superstitious, others dangerous; and notwithstanding the great encomiums to be found in authors, and the great reputation they have gained from vulgar error, all astringents, and such applications, are useless in the cure of the *recent ophthalmia*, though useful when the vessels be relaxed after powerful evacuations. A mucilaginous lotion is recommended.

Spirituous applications are highly improper in all inflammations: brandy and water is not calculated to cure an inflammation in any part, but particularly the inflamed membranes of that nervous organ the eye. However, less mischief will arise from this application than from astringents, although they act on the same principle in a less degree. It is most certain that astringent collyriums give temporary relief, and greatly alleviate the acuteness of the pain: this is effected by constringing the vessels, which is the known property of these remedies. Thus removing the cause of pain, by a temporary suppression of the discharge, the painful sensations cease for a time; but this relief, however agreeable to the patient, is not lasting: for
the

the motions of the eye gradually producing the return of a fresh discharge, as that increases the pleasing sensations, which arose from a cessation of pain, vanish; the astringent effect of the lotion is soon destroyed, and the acute smarting pains return. This will happen sooner or later, in proportion as the inflammation is more or less violent, and as the patient repeats the use of the collyrium.

There is a great variety in nature, and likewise in the same disease; for one lotion will seldom agree with two persons, though to all appearance under the same circumstances of disease: so that the strength and other properties of the lotion is always best determined by the patients themselves in the ophthalmia, as they are certainly the best judges of what gives them ease. Many derive all their happiness from such feeble aids in the habitual inflammation, and are constantly changing their lotions during life. From this cause we find the afflicted always praising and recommending to their friends some invaluable specific water to cure the diseases of the eyes; and from the same source has arisen that great number of eye waters, not only to be found in dispensatories and medical writers, but in almost every family, under the pompous title or patronage of some great name.

It is a common opinion, that in local diseases topical remedies are only necessary: this may be true in some few cases, but not in inflamed eyes. The inefficacy of this practice must evidently occur to every one, who will, without prejudice, observe the effects of topical remedies in *habitual inflammations*, which continue a number of years.

It will be allowed, if friction be applied to an inflamed part, that it will irritate, cause pain, and heighten the inflammation. This is always the case in the ophthalmia; for the eye is constantly moving in its orbit, under the pressure of the lids, and a saline fluid is ever discharging.

The

The more violent the inflammation is, in proportion will the motions of the eye and the discharge be increased, as may be observed when the eye be irritated by any extraneous body, which occasions an incessant winking.

In order to illustrate the objections to lotions, let us conceive an inflammation on any external part not destined to much motion, accompanied with excoriation, the cure is often easily performed by external applications alone. But if a constant friction be applied to the inflamed and excoriated part, and a saline fluid, such as the eyes secrete, flows constantly over it, under these circumstances the cure will be obtained with difficulty; so that beside the difference of the eyes being more irritable than other parts, when we attempt the cure of the inflammation there are many difficulties to surmount which do not occur in the simple inflammation of any other part of the body.

The motions of the eye, and the constant discharge, must, therefore, render all astringents improper until the inflammation subside. Indeed it would be a difficult matter to prove them of any utility, or to ascertain their effects in the cure; for *bleeding, purging, and other remedies*, always accompany their use.

In the recent inflammation, when not violent, bleeding and purges will cure the affection, without any other assistance whatever; and if the inflammation be violent, the cure should entirely depend on the skilful administration of proper remedies internally, an exact regimen, &c., in which cases we may naturally suppose astringents may do mischief, and retard the cure; but this will be more fully explained when the methods of cure, which have been found successful, are more fully considered.

In the ophthalmia the increased discharge is considered as an effort towards effecting a cure, which would often be accomplished, in slight cases, without any remedies whatever,

ever, were such intention not counteracted by injudicious applications.

The strongest argument I can bring against these applications are facts, under my care, at the hospital. Here may be seen many living witnesses, who prove the impropriety and uselessness of such applications, and their mischievous tendency *. It should be remembered I speak of the *violent ophthalmia*.

Some have inflammations, from prior bad treatment, that have remained in nearly one state above twenty years, in which cases these astringent lotions have been constantly used during the whole time — a proof they do not cure the malady.

Others apply with blindness, opacities of the cornea, and various other diseases, some of which are incurable from the same source.

Many of these miserable cases have arisen, in all probability, from the injudicious treatment not only of empirics, but from the officious zeal of private persons, who boast of curing diseases of the eyes, though unacquainted with the anatomy of the eyes, or causes of defective vision.

I should not have dwelt so long on this subject, had it not been found absolutely necessary to discountenance the indiscriminate use of such injurious remedies, which often occasion irreparable evils. The affections of the eyes are of too great consequence to be trifled with. Errors in practice in other diseases often admit of remedies; but a small error in the treatment of diseases of the eyes has been frequently succeeded by total blindness.

The next remedies to be considered are ponderous powders, as the *tutty*, *cerus*. *ppt. lap. calaminaris*, &c.

* At an hospital I superintended about eighteen years ago; the same may now be observed at the St. Mary-le-Bone Infirmary, to which I am physician, and where some blind persons have been lately restored to sight by regimen and internal medicines without operations.

It should be observed, that what has been advanced against astringent applications may be repeated on the use of the drying ponderous powders, with this additional circumstance—the powders being insinuated between the globe of the eye and lower lid, a constant irritation is often produced, and in consequence the inflammation is more obstinate and violent.

Solutions of *sal. ammoniac*, *common salt*, and *lime-water*, have been indiscriminately used as lotions.

These applications are absolutely cruel: they put the patient to exquisite torture, and produce no good effect whatever. By what means such injudicious remedies were ever introduced into practice is not easy to determine; but they seem to belong to those chimerical notions which a delusive knowledge in chemistry inspires, to those who cannot draw judicious conclusions from their experiments. In short, one would be inclined to imagine that some fiend had exerted his evil genius to invent inhuman tortures for the destruction of the most useful and sensible part of man.

The diet, by the generality of authors, is directed to be very low.

This doctrine cannot be too implicitly followed; the best remedies will prove ineffectual, unless assisted by the most exact regimen; but diluting, as it is called, is highly injurious in inflammations of the eyes. This observation will be extended in the ophthalmia, the operation for the cataract, &c.

If *bleeding*, *purgings*, a *lotion*, and *low diet*, should not succeed, then are blisters applied behind the ears, between the shoulders, and to the whole hairy scalp, which by some physicians are ordered to be perpetual.

Blisters are of little or no very essential service in the cure; but this practice, like many other prejudices in physic, is well supported by custom. Though were we to imagine blisters necessary, if a cure can be obtained without their use in a much shorter time, which is a fact, the

sense and humanity of every practitioner is appealed to, if he would use them?

Blisters are applied in these cases on the doctrine of *derivation* and *revulsion*, which doctrine has undergone the fate of many others, supported by some, and condemned by others. Blisters may be useful as a stimulant, when nature requires them toward the crisis of acute diseases; they may likewise have their advantages in the rheumatism, and some other morbid affections: but in the ophthalmia, where there is already too much irritation, they are not of such great importance as many have imagined: but in some violent cases of the *chemosis* they may be used conjointly with other more effectual remedies.

It is common to apply leeches to the temples, and to the inner canthus of the eye.

Bleeding with leeches is attended with very great advantages in the cure, and particularly to children in those inflamed eyes which accompany or succeed the small pox.

Sternutatories are recommended.

Sneezing is highly improper, as it accelerates the circulation, and consequently increases the inflammation. But I have seen a great number of instances in which a modern oculist has prescribed snuff, not only in inflammation, but in the *gutta serena*, *cataract*, and even *opacity of the cornea*. The ill consequences attending this practice has been equal to the ignorance and absurdity of the project; but this must occur to every sensible practitioner with the least knowledge in the nature of these diseases.

Plasters of pix. Burgund. or Burgundy pitch, and mastic, have been thought useful.

Such applications will not bear criticism, as their insignificance may strike every practitioner at first sight.

Cupping and *scarifications* are ordered in the neck.

Whatever may be the good effects produced by these methods,

thods, bleeding will in general answer the same end. I always prefer the last, as the least complex, and most certain, except in old age, or in gouty or debilitated subjects.

Scarifying the conjunctive membrane is likewise a common practice.

This injudicious and cruel practice was introduced by an English oculist at Paris *, who made a great secret of his method. From his time it has been in considerable esteem. The contriver of this extraordinary method availed himself of the credulity of mankind, and amassed considerable sums by its novelty. He boasted of it as a discovery of the utmost importance †; and this induced several practitioners in Europe to make trial of its effects, after Platner of Leipzig had written an elaborate treatise in its favor. Before this method of *Woolhouse* was made public, different modes of scarifying the conjunctive membrane had been used. Some employed a thistle, others a steel rasp, and others the pumice stone, os sepiæ ‡, &c., none of which seem calculated for the purpose.

The instrument used by *Woolhouse* was *beards of barley or rye* made into a brush, and rubbed with force on the conjunctive membrane, either that part which lines the lid, or on the *albuginea*. After the operation, to prevent an adhesion of the parts, he applied a barley corn, two or three seeds of clary, or some gold-beater's skin. This is the process of the operation.

The severe pain, occasioned by an instrument with many sharp points rubbed with violence and swiftness on so sensible a part as the eye, may be easily imagined by persons not of the most exquisite feelings. When such practice is not attended with any advantages, but that, on the contrary, has occasioned blindness, it fills the mind with horror to reflect on the many victims who have been sacrificed by this inex-

* Woolhouse.

† Dissertationes scævantes & critiques de Woolhouse.

‡ Hippocrates, Celsus, and Ægineta.

pressible cruelty. I have seen this method tried repeatedly, and other methods of scarifying the conjunctiva, but without success, except by means of a lancet, in the true *chemosis*. In some it has produced a fever, attended with violent pains in the head, a delirium, and many other disagreeable symptoms*.

The objections are many against this practice. It is unnecessary in the cure of the simple ophthalmia. Besides, if the points of this sharp instrument break during the operation, they must occasion the most intolerable racking pains; nor can they be extracted. Adhesions of the parts have ensued, though the authors are not candid enough to confess it, yet they guard against the mischief by introducing an extraneous body between the eye and the lid. As those who have adopted the practice are very liberal in prescribing other remedies, I suspect that the operation was sometimes dispensed with, and only a parade made of performing it to enhance the merit of the cure; for it is the practice of quackery to delude and magnify trifles. What success has been attributed to scarification has been chiefly owing perhaps to the other remedies made use of.

Scarification has been recommended by Mouchart and Platner as useful in all disorders of the eyes, as *wound*, *cataract*, *pterygium*, *hypopyon*, *staphiloma*, and the like†.

* A young lady had an inflammation in her right eye; her friends imagining it dangerous, applied to an oculist of reputation who lives in town: he immediately magnified the danger, and proposed scarification. At this time the young lady had her sight perfectly, and no doubt would have been easily cured by proper bleedings and internal remedies; but the consequence of this operation was a total blindness, for the whole transparent cornea became opaque, and makes a disagreeable appearance. I could only attempt the cure of the inflammation and pain, in which I succeeded; but no remedy whatever will recover the sight of the eye.

An instance has lately occurred where an eminent surgeon, attempting to scarify the eye in an inflammation, evacuated the humors, and destroyed the eye.

† Vide Mouchart & Platner Dissert. de Scarif. Oculorum.

In these instances they have carried their pretensions too far, as every one acquainted with the anatomy and diseases of eyes must be convinced.

Issues, setons, and caustics behind the ears, have been recommended: the last is the practice of some of the most eminent surgeons in town.

Issues and *setons* were made use of in the early ages*, upon a presumption of diverting the discharge from the parts affected, and are used as the last resource.

In the recent ophthalmia, either issue or seton are seldom necessary.

Their importance shall be examined in the habitual ophthalmia, and here facts alone shall be mentioned. Those who have had inflamed eyes many years, in which there is constant irritation and discharge, we most commonly find with either seton or issue: from this circumstance it plainly appears they do not effect a cure. If it should be advanced that they cause a less discharge from the eyes, or produce any good whatever, this can only be vague conjecture, and by no means whatever can be proved; for to say a remedy relieves a disease, when we have no demonstrative proof in its favor, does not deserve a serious refutation.

Practitioners have imagined great danger from the healing issues or setons, when the patient has been used to these discharges any length of time. The patients are under the greatest apprehensions on this account, though there are few notions in physic more erroneous.

It cannot be proved that the seton or issue is of any essential service in the cure; and those patients who have had inflamed eyes many years will confirm this. No danger, or any ill consequences, attend the sudden healing of an issue or seton, as can be proved by some hundreds of instances, *unless the fluids be very acrimonious.

* By Hippocrates, Galen, and others.

In the *Essay* which was published in 1769, on the *Cure of ulcerated Legs without Rest*, the insignificance of issues in preventing a relapse after the cure is mentioned.

The received opinion is, that a translocation of matter will ensue, and attack the brain or the lungs, produce a diarrhoea, fever, or that some other dangerous consequences will arise from the healing of the ulcer, if habitual. In answer to which facts only need be produced. Since the publication of that *Essay* some hundreds of the most inveterate and habitual ulcers, from five to twenty or thirty years standing, have been cured. The issues were always immediately healed, and no issue was directed after the cure; no ill consequences succeeded, nor have the ulcers thus cured broken out again, because the cause in the constitution has been removed by correcting mineral alteratives. This is not asserted from having success in a few instances only; on the contrary, it is the result of many years extensive practice: few in the profession have had more remarkable trials, and none perhaps greater success in those cases.

These particulars have been advanced to shew how necessary it is for practitioners not to build their faith too steadily on many prejudices to be found in practice; nor is it adviseable to embrace new doctrines but with the greatest prudence and circumspection.

The *ung. tutiæ*, powdered vitriol with butter, and Sir Hans Sloane's ointment, I shall range under one class.

As to the butter and vitriol, it is so analogous to the astringent lotions, that it only need be observed that they are more injudicious; the vitriol not being dissolved, and greasy applications seldom agreeing with the eye in an inflamed state.

The ointment of Sir Hans Sloane was kept a profound secret many years, and said to be of use not only in inflammations, but in the opacity or films of the cornea, the cataract,

raft, and many other diseases of this organ. Some authors have said so much in its favor, that we might be led to believe it would be impossible for any person to have an incurable disease in this organ after such a noble remedy had been made public. But we are taught by experience, from many living witnesses, that it is not only ineffectual in promoting the cure of the diseases mentioned, but is absolutely, in many cases, injurious.

To prove this, the particulars of this liniment do not require enumeration, as an opinion has been given concerning the powders. One part of the composition, which is the *adepts. viper*, is very objectionable. Every practitioner of experience must have observed the effects of greasy or oily applications to the eyes, they always occasion great irritation and pain; so that the liniment can only be serviceable to the edges of the lids, if any virtue can be allowed it. As to its being useful in the *cataract*, *opacity of the cornea*, &c., those who believe it must be very ignorant of the diseases of the eyes.

According to the directions of Sir *Hans Sloane*, when this liniment was used, he always prescribed bleeding, and other powerful remedies; so that it requires no small sagacity to ascertain what part of the cure was effected by the liniment; though had it been of such consequence as was believed, many of the other methods which accompanied its use must be allowed superfluous.

Poultices of various sorts have been used.

Poultices are highly improper, and do considerable mischief. More injuries have been done the eyes, and more persons have been blinded by the injudicious use of poultices, than all the other methods joined together: they promote the formation of abscesses between the laminae of the cornea, which end often in that species of blindness which no remedy whatever can recover. There is not an incurable case out of a hundred patients, in the opaque cornea, but
has

has been owing to the imprudent application of this remedy; but I shall more freely treat of this subject hereafter.

These are the general methods made use of in the cure of the recent ophthalmia: there are many more, but so absurd, that I shall pass them over unnoticed, as they do not require criticism, as the *blood of a pigeon, oil of linen, infusion of eye bright, boring the ears and wearing earrings, urine, &c.*

It is with concern declared, that some authors have written more for their own private interests than from any intentions of serving mankind: others affect to secret methods, which they reserve to themselves, declaring if a man bestows proper time and attention, he may arrive at the most *hidden secrets* in curing these diseases, but do not inform us of these secrets. This is sufficient to demonstrate their want of candor, and on what principle they published their elaborate treatises. They might as well have advanced less on the subject, and mankind might then have been spared many cruel torments. From many of their writings they appear not unlike the race of secret chemists and projectors; amongst whom is the famous *Basil Valentine*: he, after giving a process in chemistry in inexplicable terms, finishes with this pious observation — “ *If heaven reveal to you, by supernatural means, what I have related, (for I have been very explicit) you may consider yourself as one of the elect: if not, you may content yourself in ignorance, for you can never arrive at any knowledge in secret chemistry.*” So if we can conjure out the cure of diseases of the eyes, we may think ourselves happy: if not, we may sit down contented in a state of ignorance, for few advantages which are to be found in some modern authors.

I would not have it supposed that I am insensible to many absurdities of the ancients; my veneration does not rise so high for either ancients or moderns as not to endeavor to discover their prejudices; many superstitions to be found in the ancient theory no argument whatever can defend; but many of the later systems are equally erroneous, and reflect no

great

great honor on the moderns. The learning of the ancients was confined to a few individuals. The moderns, with the advantages of printing, have diffused their knowledge to most parts of the world, and far excel the ancients in many sciences; yet if the present state of physic, in some instances, be examined, there is no great reason to boast of our improvements, if compared with what might have been expected. It may be observed, that every medicine of efficacy, and the great discoveries in anatomy, have always been warmly opposed at their entrance by those who passed for the most learned, eminent, and regular practitioners of the time; and they have ever been the last in promoting improvements, or curing the sick out of the common dull tract. Whether this may arise from envy, pride, or negligence, is not my province to determine, but it has been often productive of injurious consequences.

This part shall be concluded with hopes that regular practitioners will unite their endeavors to improve the treatment of these diseases. We have seen the many impositions of foreign oculists and others, to the disgrace of all learning. I would advise those who attempt to make improvements, to never use complex remedies. If they would wish to try any new remedy, let them depend on that alone, and let it be on some rational principle, by which means its utility will be ascertained. I am fully persuaded the improvements in this or any other branch of physic will depend on the introduction of a more accurate anatomy and physiology, or the drawing clearer conclusions than formerly from actual morbid dissections; a specimen of which I have given in the *Treatise on female and nervous Diseases*. Complex medical practice confuses the mind, and requires complex reasonings for its support; the empirical is uncertain and hazardous; but simple practice, founded on true reasonings and successful facts, will support the dignity of the profession against all cavilling opposition.

The theory formerly published on the ophthalmia was as follows, in the second edition of the Treatise on the principal Diseases of the Eyes :

P R I N C I P L E S.

1. A distention of the minute vessels, in an exceeding nervous and vascular membrane, will cause pain.
2. When pressure and constant friction be added, the irritation will be more violent.
3. If the vessels be kept distended with a fluid, the effects will continue.

OBSERVATIONS ON THE PRINCIPLES.

1. That the conjunctiva is both vascular and exceedingly nervous is beyond dispute.

As a proof of distention, let any one examine the eye when inflamed through a magnifying glass, and vessels which do not appear in the healthful state, will be then found considerably enlarged in their diameters, full of red blood, and on the utmost stretch ; that this distention causes pain we need only appeal to the feelings of the patient.

2. That there is a constant pressure and friction of the parts, I believe, will be granted.

The eye is continually moving in its orbit, and gently pressing against the lids ; if the conjunctiva be considerably thickened by the inflammation, then will the pressure be increased. That this pressure and friction on the inflamed parts increase the inflammation is obvious ; the irritation must, therefore, be increased, and the pain rendered more violent. This may be proved from practical observation ; for the inflammation, which at first is trifling, if left to nature, will often in a few hours become intolerable from the acute smarting pain. It is this constant pressure and friction that is the
cause

cause of that difficulty which has been observed in the cure of the habitual ophthalmia and ulcers of the eyelids.

3. It is most certain, that if the distention of the vessels be the cause of irritation, and if the vessels be kept distended with a fresh supply of fluids, the effects which the distention produces will most probably continue.

The common practice in the cure of the ophthalmia will prove this ; for if the inflammation be violent, the common methods of cure are often tedious or ineffectual, even where depletion may be liberally used. For though the patient be forbidden the use of all strong diet, yet he is allowed to drink plenty of thin diluting liquors, under the absurd notion of *diluting* ; but as a great part of these liquids probably enter the lacteals, the vessels will be kept distended ; even water will distend a vessel equally with any other liquid. The only difference between weak liquors and those of a stronger nature is the heat which the latter produce ; so that depleting the vessels is not only necessary, but they must be prevented from filling, or all attempts to cure the ophthalmia, if violent, may prove ineffectual.

After so long a period as eighteen years since the second edition was published, I have little reason to alter my sentiments on these subjects ; but they are more extended in the present edition, and more applicable to many excellent recent discoveries.

NAMES and DISTINCTIONS of One Hundred and
Eighteen Genera of EYE DISEASES.

Of Diseases of the Eyebrows, or Supercilia.

1	Defect of eyebrows or eyelashes, called <i>madarosis</i> , 3 species	Page	1
2	Of insects in the eyebrows, called <i>phthiriasis</i>	}	2
3	Wounds of the eyelid, 3 species		

Diseases of the Eyelashes, or Cilia.

4	The eyelashes growing inwardly, called <i>trichiasis</i> , 2 species	3
	The double series of eyelashes or <i>cilia</i> , called <i>distichiasis</i>	4

Diseases of the Eyelids, or Palpebræ.

5	Concretion or growing together of the eyelids, called <i>ankyloblepharum</i> , 3 species	5
6	Adhesion of the eyelid to the globe of the eye, called <i>symblepharum</i> , 2 species	6
7	Inflammation of the eyelid, called <i>blepharophthalmia</i> , 3 species	7
8	Swellings in the eyelids from a collection of serum in the cells, called <i>œdema palpebrarum</i> , 2 species	8
9	The swelling of the eyelids from air, called <i>emphysema palpebrarum</i>	ib.
10	A red tumor of eyelids from red blood diffused in the cells, called <i>ecchymoma palpebrarum</i> , 3 species	9
11	Encysted swellings of the eyelids, called <i>atheroma palpebrarum</i> , 2 species	10

GENERA OF EYE DISEASES. xlv

Page

12	Fleshy excrescences on the eyelid, called <i>sarcoma palpebrarum</i>	11
13	Tubercles, or indurated tumors of the eyelid, called <i>scirrhbus palpebrarum</i> , 2 species	12
14	A malignant cancerous ulcer of the eyelid, called <i>cancer palpebrarum</i> , 3 species	ib.
15	A malignant tubercle on the eyelids, called <i>carbunculus palpebrarum</i>	15
16	Inflammatory boil in the margin of the eyelids, called <i>hordeolum</i>	16
17	A moveable tubercle without pain in the margin of the eyelids, called <i>chalazion</i> , 4 species	17
18	Pellucid vesicle in the eyelids, called <i>hydatis palpebrarum</i>	18
19	A hard tubercle and white in the eyelid, called <i>milium palpebrarum</i>	19
20	A mulberry-colored tubercle on the eyelid, called <i>morum palpebrarum</i>	ib.
21	<i>Verrucæ</i> , or excrescences of the eyelids, 3 species	ib.
22	Asperities in the internal superficies of the eyelid, called <i>trachoma</i>	20
23	A prolapsus of the upper eyelid, called <i>blepharoptosis</i> , 8 species	21
24	The want of power to close the eyelid, called <i>lagophthalmus</i> , 10 species	29
25	The turning of the eyelid outwardly, called <i>ectropium</i> , 9 species	33
26	The eyelid turning inwardly, called <i>entropium</i> , 3 species	37
27	Scabby eruption of the margin of the eyelids, or <i>psorophthalmia</i> , 2 species	38
28	A swelling and redness of the margin of the eyelids, or <i>rubor marginum palpebrarum</i> , 4 species	39
29	Callous thickness of the margins of the eyelids, or <i>tylosis</i> , 2 species	40

30 Wounds

xlvi GENERA OF EYE DISEASES.

	Page
30 Wounds of the eyelids, or <i>vulnera palpebrarum</i> , 4 species	41
31 Fistulous ulcer of the eyelid, or <i>fistula palpebrarum</i> , 2 species	43
32 Opening in the eyelids, or <i>coloboma</i>	44
33 An involuntary opening and shutting of the eyelid, or <i>nictitatio</i> , 5 species	ib.
34 Contraction of the eyelids, or <i>spasmus palpebrarum</i> , 5 species	45
35 Itching of the eyelids, or <i>pruritus palpebrarum</i> , 4 species	47

Diseases of the lachrymal Passages, or Morbi viarum Lacrumalium.

36 A dryness of the eye, or <i>icheroma</i> , 4 species	ib.
37 A superabundance of tears in the eyes, or <i>epiphora</i> , 8 species	50
38 Puriform matter from the eyelids, or <i>lippitudo</i> , 5 species	53
39 Dropfy of the lachrymal sac, or <i>hydrops lacrumalis</i> , 6 species	55
40 A tumor without the lachrymal sac in the internal canthus, or <i>anchoylops</i> , 8 species	58
41 An ulcer in the internal canthus, or <i>ægylops</i> , 5 species	60

Fistula Lacrumalis.

42 An efflux of puriform matter from the <i>puncta lacrumalia</i> , 6 species—operations	61
43 Excreescence of the caruncula lachrumalis, or <i>encanthis</i> , 2 species	73
44 A decrease or defect of the caruncula lachrymalis, or <i>rhyas</i>	75
45 Peribrosis, or ulcers at the corners of the eye	76
46 Puriform fordes inhering to the internal canthus, or <i>lemofitas</i> , 2 species	77
	47 A

47	A sweating of blood from the eyes, or <i>lacrumatio sanguinea</i>	77
----	---	----

Diseases of the Membrana Conjunctiva.

48	Inflamed eyes, or ophthalmia, its various causes and species to the number of 22, with the different modes of treatment	77
49	Vehement pain in the eye without redness, or <i>ophthalmodina</i> , 8 species	122
50	<i>Varix</i> , or dilatation of the veins, 2 species	125
51	An effusion of blood in the cells of the conjunctive membrane, or <i>ecchymosis conjunctivæ</i> , 2 species	126
52	Pustules of the conjunctiva, or <i>pustulæ conjunctivæ</i> , 2 species	127
53	Vesicles in the conjunctiva, or <i>phlyctenæ</i> , 2 species	<i>ib.</i>
54	A hard tubercle of the conjunctive membrane, or <i>papula</i>	128
55	A red papula, or <i>caruncula</i> , 2 species	<i>ib.</i>
56	Carbuncle of the eye, or <i>carbunculus oculi</i>	129
57	Ulcer of the conjunctive membrane, or <i>ulcus conjunctivæ</i> , 3 species	130
58	Extraneous bodies falling into the eyes, 2 species	<i>ib.</i>

DISEASES of the CORNEA, or MORBI CORNEÆ; in which are offered many new Observations.

59	Obscurity of the cornea, 6 species	133
60	Specks of the cornea, or <i>maculæ</i> , 5 species	153
61	Membranous excrescence expanding from the internal canthus to the cornea, or <i>pterygium</i> , 5 species	160
62	A preternatural thickness and opacity of the cornea, or <i>staphyloma</i> , 7 species	162
63	Abscess between lamellæ of the cornea, or <i>onyx</i> , 2 species	165
64	Ulcer in the superficies of the cornea, or <i>helcoma</i> , 5 species	166

xlvi G E N E R A O F E Y E D I S E A S E S.

	Page
65 Sinuous ulcer, or <i>fistula corneæ</i> , 2 species	168
Wound of the cornea, or <i>ulcus corneæ</i> , 5 species	170
66 A corrugation and subfiding of the cornea, or <i>rutidosis</i> , 4 species	171
67 Pustules or vesicles full of pus in the cornea, or <i>pustula corneæ</i> , 2 species	172
68 Vesicles with serum in the cornea, or <i>phlyctenæ corneæ</i> , 2 species	173
69 Red soft caruncles of the cornea, or <i>caruncula corneæ</i> , 2 species	174

Diseases of the Bulb of the Eye, or Morbi Bulbi Ocularis.

70 Wasting of the globe of the eye, or <i>atrophia bulbi</i> , 5 species	174
71 A protuberance of the globe of the eye that the eyelids cannot be closed, or <i>exophthalmia</i> , 4 species	176
72 The falling of the eye on the cheek, or <i>ophthalmoptosis</i> , 4 species	178
73 Cancer of the globe of the eye, or <i>carcinoma bulbi</i> , 2 species	181
74 A constant contraction of the muscles of the globe of the eye, or <i>tetanus oculi</i> , 2 species	185
75 An involuntary agitation of the globe, or <i>nystagmus</i> , 5 species	186
76 Wounds of the sclerotic membrane, or <i>vulnus scleroticæ</i> , 3 species	187
77 The want of one or both eyes, or <i>defectus oculi</i> , 2 species	188
78 Supernumerary eye, or <i>oculus supernumerarius</i>	189

Diseases of the Iris, or Morbi Iridis.

79 Dilatation of the pupil, or <i>mydriasis</i> , 7 species	ib.
80 A contraction of the pupil, or <i>myosis</i> , 7 species	192
81 A concretion or growing together of the pupil, or <i>synizesis</i> , 5 species	194

GENERA OF EYE DISEASES. xlix

	Page
82 A concretion of the iris with the cornea, or <i>synechia</i> , 6 species	203
83 The prolapsus of the iris through a wound of the cor- nea, or <i>ptosis iridis</i> , 2 species	207
84 Wound of the iris, or <i>vulnus iridis</i> , 2 species	209
85 Deformity of the pupil, or <i>pupillæ deformitas</i> , 3 species	ib.
86 Preternatural pupil, or <i>pupilla preternaturalis</i> , 2 spe- cies	210
87 Repeated dilatation and alternate contraction of the pupil, or <i>bippus</i>	ib.
88 Immobility of the pupil, or <i>immobilitas pupillæ</i> , 4 species	211

Diseases of the aqueous Humor, or Morbi Humoris aquei.

89 A dropfy of the aqueous or vitreous humor, or <i>hy- drophthalmia</i> , 3 species	213
90 A collection of pus in the cavity destined to the aqueous humor, or <i>hypopium</i> , 5 species	215
91 The application of an artificial eye, and its compo- sition, &c.	219
92 An effusion of red blood in the chambers of the eye, or <i>hypoæma</i> , 2 species	221
93 A collection of white humor in the chambers of the eye, or <i>hypogala</i> , 2 species	222
94 Turbidity of the aqueous humor, or <i>turbiditas hu- moris aquei</i> , 3 species	223
95 Efflux of the aqueous humor, or <i>effluvium humoris aquei</i> , 2 species	224

DISEASES of the CRYSTALLINE LENS.

96 Cataract, or <i>cataracta</i> , and its various species, ope- rations necessary, &c. 25 species	226
Crystalline cataract	ib.
Capfulary cataract	227
Spurious cataract	ib.

Hard

1 GENERA OF EYE DISEASES.

	Page
Hard cataract	227
Soft cataract	<i>ib.</i>
Fluid cataract	228
Fluid and hard cataract	<i>ib.</i>
Cystic cataract	<i>ib.</i>
Light gray cataract	<i>ib.</i>
White cataract	<i>ib.</i>
Glaucal cataract	229
Black cataract	<i>ib.</i>
Variegated cataract	230
Large cataract	231
Small cataract	<i>ib.</i>
Perfect mature cataract	<i>ib.</i>
Immature cataract	232
Recent cataract	<i>ib.</i>
Inveterate cataract	<i>ib.</i>
Secondary cataract	<i>ib.</i>
Simple cataract	233
Complicated cataract	<i>ib.</i>
Local cataract	234
Universal cataract	235
Connate cataract	236
Causes of the cataract	<i>ib.</i>
Diagnosis of the cataract	237
Prognostic of the cataract	<i>ib.</i>
<i>Cure of the cataract by medicines, the operations of</i>	
<i>depression or extraction, which to be preferred,</i>	
<i>from 237 to 285</i>	

The Diseases of the vitreous Humor.

97	<i>Glaucoma</i> , or the rays of light impeded by a turbid- ness of the vitreous humor, 3 species	288
98	<i>Synchysis</i> , or a solution of the vitreous humor	290
99	Falling out of the vitreous, or <i>prolapsus</i>	291

Disorders of the Retina.

	Page
100 The eye not bearing light from an affection of the retina, or <i>photophobia</i> , 5 species ———	293
101 <i>Gutta serena</i> , or the insensibility of light on the re- tina, or <i>choroides</i> , 20 species, from 294 to 311	311
102 Vision too acute, or <i>oxyopia</i> , 3 species —	311
103 Debility of sight, or <i>amblyopia</i> , 13 species	312
104 Sight in the evening, but not in the day, or <i>nyctalopia</i> , 8 species ———	319
105 Seeing clearly in the day, but not in the night, or <i>hemeralopia</i> , 4 species — —	321
106 Difficulty of seeing objects a little distant, or <i>myopia</i> , 6 species ———	322
107 Seeing objects at too remote a distance, or <i>presbyopia</i> , 8 species ———	324
108 Half vision, or <i>hemiopsia</i> , 3 species —	328
109 Appearance of flies, or <i>myodesopsia</i> , 4 species	329
110 Network-like vision, 2 species —	331
111 Cloudy vision, or <i>visus nebulosus</i> , 8 species	332
112 Vision in which figures seem changed, or <i>metamor- phopsia</i> , 7 species ———	335
113 Colored vision, or <i>chropsia</i> , 8 species —	337
114 Too luminous vision, or fiery sparklings, or <i>pho- topsia</i> , 5 species ———	339
115 Squinting, or <i>strabismus</i> , 16 species —	341
116 Oblique vision, or <i>luscitas</i> , 5 species —	346
117 Double vision, or <i>diplopia</i> , 11 species —	348
118 The manner of correcting defects of vision by glasses, and the skilful choice of spectacles	353
Dr. Franklin's spectacles to view objects close or at a distance ———	358

CONSPECTUS of some of the principal Doctrines;
with additional Observations since printing of
the Work.

In the Introduction, the anatomy and physiology of the eye, the theory of vision, &c. &c. with plates.

Page 4.

Plucking out the eyelashes repeatedly a cure for the *trichiasis*.

Page 6.

The cure of the diseased *sebaceous glands*, by internal remedies, according to different constitutions, whether inflammatory, debilitated, or acrimonious.

To this may be added a late discovery, which is the careful application of *unguentum hydrargyri* with *camphor* to the margins or tarsus of the eyelids.

In the *Blepharophthalmia*, page 7.

To be added, for the bite of insects, spirits of hartshorn diluted with water.

Page 8.

In the dropfical swellings of the eyelids, between the times of evacuating, to administer tonics and steel, &c., by which numerous dropfies have been cured, not only *ascites*, but *anasarca*.

Pages 10 and 11.

The cure of the atheroma by fuming spirit of nitre carefully applied.

In the application may be added, that lint secured on the point of a small wooden skewer is better than any other method. When the part to be destroyed is touched, the part should be wiped or dabbed with dry lint to absorb the moisture and prevent the spirit acting on the adjacent parts. By this means I have removed the scirrhus tumors

mors that are forerunners of the cancer in the lips, nose, mouth, breasts, &c. &c.

Pages 12 and 13.

New mode of curing the scirrhus tumors by mineral alteratives and cinnabarine fumigations.

In these cases mercury alone does frequent mischief. See my *Treatise on Cancers*.

Page 14.

The remedies specified, consisting of the mineral alterative class, given in small doses and at equal distances of time.

Page 15.

Fumigations, lotions, &c.

Page 16.

The management of the carbuncle.

Page 17.

In the hordeolum, the use of the acid spirit of nitre.

Pages 20 and 21.

In the verrucæ, the use of the acid spirit of nitre, the *pilula rubra*.

Page 22.

In the falling down of the eyelid, see case in the note.

Page 23.

In the palsy of the muscles of the eyelid.

Some new observations on the palsy, which are more diffusely considered in my *Treatise on nervous Diseases* under the head palsy, &c.

Pages 25, 26, and 27.

The causes of palsy from dissections and reasoning.

The difficulty of cure, with defects of common practice.

The disorder being deeply seated, vigorous methods alone adequate to the cure.

Page 34.

The use of the spirit of nitre, but hazardous if not very cautiously applied.

Page

Page 38.

The use of my *speculum oculi* in many eye diseases, which only acts on the internal surface of the eyelids and bones of the orbit.

Page 39.

Camphor solution and mercurius corrosiv. sublimat. recommended, &c. &c.

Page 41.

Poultices condemned in the *tylofis*.

Page 50.

In the *epiphora*, mineral alteratives.

Page 54.

In the *lippi tudo*, mineral alteratives recommended.

Page 56.

The *spirit of nitre* must be used in very small portions.

Page 64.

Use of the *lotio penetrans* in the *fistula lacrumalis*.
Alteratives.

Page 80.

Formulae of remedies for the ophthalmia, or various inflammations of the eyes.

Page 81.

Dry diet, with reasons why.

Application of mucilaginous lotions.

Page 83.

The vascular and vesiculous inflammation entirely new.

Chemosis, or most violent inflammation.

The complicated.

Page 84.

The *causes* from anatomy and reasonings.

Boerhaavian method of *diluting*, as it is called, highly erroneous in inflamed eyes; why.

Pages 87, 88, 89, 90, and 91.

Amongst the indications of cure, several new practical ideas both as to diet and remedies.

Poultices excluded, and why.

Prescriptions 6, 7, 8, 9, 10, 11.

The necessity of a spirited practice, or blindness follows.

Pages 92 and 93.

Prescriptions 12, 13, 14, 15, 16, 17.

Ideas about scarifying the eyes.

Pages 94 and 95.

Prescriptions 18, 19, 20, 21, 22, 23, 24, 25, 26, 27.

The *spirit. salis* an error, only ʒss. to ℥ij. instead of ʒij.

Page 96 to 123.

Poultices, why dangerous or injurious to the eyes; but some external applications necessary.

Many new observations.

Prescriptions 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42.

For the different species of inflamed eyes, in the scrophula, venereal, intermittent, nurses cure children by taking medicines instead of the infant.

Rational manner of treating the King's evil. Sea water not efficacious.

Almost every page in this part contains something new.

Page 130.

Fumigations in the *ulcus conjunctivæ*.

Pages 131 and 132.

In the extraction of extraneous bodies, &c.

Page 135, 136, 137, 138, and 139.

Several new doctrines to remove blindness from obscurity of the *cornea*, with anatomical reasons, from the structure and experiments on the cornea.

Prescription 43, and reasonings.

The removal of these specks by internal medicines chiefly has been

lvi CONSPECTUS OF THE WORK:

been publicly shewn many years, and lately at the *St. Mary-le-Bone Infirmary*, where I attend as physician.
Illiberal to oppose doctrines because they be new, much more so if successful.

Applying remedies to the whole surface of the eye, in a partial disease, irrational and cruel.

Page 143.

Danger of piercing the cornea.

Page 144.

A rapid cure not practicable, as I have shewn at the *St. Mary-le-Bone Infirmary*; but gradually opacities may be removed.

Pages 145 and 148.

An extraordinary case of restoring sight in an infant by giving the nurse the medicines.

Prescriptions 44, 45, 46, 47, 48, 49, 50, 51.

Humid diet forbid.

Page 149.

Cures impracticable without a *dry diet*.

Pages 150 and 151.

Extraordinary case of the eyes being infected with the venereal disease by washing with urine of an infected person.

Blindness followed an erroneous practice.

Various prejudices observed.

Opacity from the King's evil, small pox, &c.

Antimony, its use.

Salt water rarely cures the evil, called scrophula.

Page 154.

Fallacious doctrines concerning the King's evil. Danger of men believing what they read, instead of examining facts that present themselves.

Lotio penetrans useful in opacities of the cornea.

Page 158.

Ingratitude of mankind often prevents practitioners from attempting to remove blindness.

Page

Page 162.

Staphyloma, its true description.

Page 163.

Water made colder by dissolving sal. ammoniac makes a proper cold bath, &c.

Page 168.

Scrophulous ulcer of the cornea, how cured.

Page 170.

Remedies, how applied to different constitutions ; what may be proper for one patient may be injurious to another of a different habit, &c.

Page 178.

An *exophthalmia* has happened from mercurial frictions, &c.
A case.

Page 180.

Cutting out the eye has occasioned convulsions and death in the *ophthalmoptosis*.

Page 182.

The carcinoma, or cancer of the eye, not to be cut out, unless from the most urgent necessity.

Page 188.

Patient should be well prepared by diet and regimen before depressing the cataract, &c.

Page 189.

Mydriasis, from water in the ventricles of the brain, generally incurable in children.

Page 190.

Sal. sodæ recommended to dislodge worms ; but more on this subject may be seen in the *Treatise on female and nervous Diseases*, &c. To be cautiously used. If there be an acid in the stomach, alkaline salts are neutralised, &c.

Pages 195 and 196.

Synizesis, or contracted pupil, with difficulty cured without operation.

Case of a remarkable cure by internal medicines.

lviii CONSPECTUS OF THE WORK.

Page 198.

Another remarkable case of blindness cured by internal medicines.

Pages 201 and 202.

Another remarkable case of sight restored many years ago by internal medicines.

Manner in which alterative mineral remedies should be given.

Page 215.

The eye not to be cut out in the *hydrophthalmia*, &c.

Page 217.

Poultices condemned in the *hypopium*.

Page 218.

Observation on the incision, &c.

Page 224.

Instances of the wounds of the cornea healing in forty-eight hours.

Page 230.

Color of cataracts do not always ascertain their maturity, &c. What has been observed.

Page 231.

Some account of a liberal charity for eye diseases, &c., failing; but the experience acquired useful.

From page 232 to 288.

A variety of practical observations on the cataract, operations necessary, and improvements both medical and surgical.

Page 289.

Some remedies for the treatment of the glaucoma, or opacity of the vitreous humor.

Pages 293 and 294.

Some observations on the *photophobia*.

From page 294 to 310.

A great number of new remarks on twenty species of the
gutta

CONSPECTUS OF THE WORK. lix

gutta serena; internal and external remedies, with prescriptions.

From page 311 to 352.

Many practical remarks on the *oxyopia*, *amblyopia*, *nyctalopia*, *hemeralopia*, *myopia*, *presbyopia*, *hemioptia*, *myodesopia*, *visus nebulosus*, &c. &c.

Squinting, &c.

Page 353.

Observations on the use of glasses to remove many defects in vision.

For the near-sighted.

For the distant-sighted.

For those who cannot bear a strong light.

Causes of many defects.

Account of a species of spectacles recommended and used by the late Dr. *Benjamin Franklin*.

DR. ROWLEY'S MEDICAL WORKS.

The Publishers beg Leave to acquaint the Public, that the following Works may be had at J. WINGRAVE's, (late Nourse's) Strand; E. NEWBERRY's; Corner of Ludgate Hill; and T. HOOKHAM's, New Bond Street:

1. **A** TREATISE on female, nervous, bilious, hyfteric, convulsive Diseases, Apoplexy, Palsy, Insanity, and Suicide; the Treatment of which is founded on anatomical Facts and new Principles, according to the Difference of Constitutions. Price 7s. 6d.

2. A Treatise on the Cure of old Ulcers of the Legs without Rest, and Impurities of the Blood; proving that the Cure consists in changing the Acrimony in the Constitution: with many new Directions for Diet and Remedies. Fourth Edition. Price 2s.

3. A Treatise on the ulcerated, malignant Sore Throat, and putrid Diseases; with the medical and domestic Management to prevent the Infection spreading, &c. Price 3s.

4. A Treatise on the Management of Female Breasts during Childbed; and several new Observations on cancerous Diseases of the Breasts, Womb, Nose, Lips, Eyelids, Rectum, &c. &c. With Prescriptions. To which are added Remarks on Pretenders to the Cure of the Cancer. Second Edition. To which are added,

5. Two Letters to Dr. William Hunter, on the dangerous Tendency of medical Vanity; containing a remarkable Cure of a cancerous Ulcer of the Womb and Rectum; the Remedies used, &c.; with Objections to the Use of Hemlock, &c. Second Edition. Price 3s.

6. Medical Advice to the Army and Navy serving in Hot Climates; containing a brief View of the common Army Diseases, putrid Fevers, Fluxes, &c. Price 1s.—This book was presented to His Majesty in 1776.

7. Truth Vindicated; or, The specific Differences of Mental Diseases ascertained, proving the mental Affection of a Great Personage was never Insanity, but merely a feverish Delirium. Price 1s. 6d.

8. The Gout Alleviated; or, The excellent Effects of the muriatic Acid and tepid Water in Fits of the Gout; with Reasons why the Gout in general has been incurable.

Speedily will be published,

The first Volume of the Latin Edition of the *Schola Medicinæ universalis nova*; with above fifty Copper-plate Engravings, comprehending all the Branches of Medicine, may be seen at the Doctor's House in Saville Row, by the Faculty or philosophical Gentlemen.

Some General Pathological Principles in applying
 ANATOMY and PHYSIOLOGY to EYE DIS-
 EASES.

A rational and general pathology and the curative indications in diseases of the eyes, in a great measure, may be formed from the preceding anatomy and physiology. When it be well understood what state of the eyes constitutes perfect vision, it will conduct the mind to contemplate in what consists its various defects.

In Plate I. may be considered,

1. If the lacrymal gland be irritated by inflammation, it may secrete more fluid than necessary, and that of an acrid nature, which may irritate the conjunctiva, and occasion inflammation, pain, &c.

2. The lacrymal gland may be rendered incapable of secreting its fluid, a dryness may then ensue, and the facile motions of the eye be impeded, and rendered difficult and grating.

3. The lachrymal points may lose their power of attracting the superfluous tears, the tears will then flow outwardly by the side of the nose, which happens in obstructions of the lachrymal canals, *fistula lachrymalis*, &c.

4. The ligamentary girt may be too narrow, and the superfluous tears will with difficulty pass into the nose.

5. The cure of all these affections will consist in discovering the causes, and removing them by a skilful administration of remedies, &c., recommended in the practical part of this Treatise.

In Plate II.

1. The openings of Meibomius's glands may be obstructed; the oleaginous and mucilaginous fluid, which moderates the saline sharpness of the tears, will not issue: hence redness of the lids and conjunctive membrane, acute pain, and various disorders.

2. From an acrimonious state of the blood the secretion may be changed into a morbid state, and not be of that mild balsamic quality so as to moderate the saline particles of the tears, then pain, redness, inflammation, &c., may ensue. The conjunctive membrane, when highly inflamed, besides distention of vessels, all its *cellular structure* may be filled with *red blood*, as in the *chemosis*.

3. The optic nerve in Figure III. may be compressed in its passage to the brain: hence the *gutta serena*, &c.

4. The vitreous humor or crystalline lens may become opaque; the former is the *cataract*, the latter the *glaucoma*; by which the light cannot be transmitted to the retina: hence blindness, or impeded vision, according to the degrees of obscurity.

5. The ciliary processes being diseased by a paralytic affection, &c., may close or dilate the pupil, and the nervous expansion, called retina, being generally diseased, its sensibility to light becomes destroyed: hence the *gutta serena*, &c.

6. In Figure IV. the ciliary arteries may convey blood, but the ciliary veins may be obstructed: hence quickened circulation in the arteries, inflammation and distention of the veins, and various species of confused or impeded vision.

In Plate IV.

In considering the possible affections of the ciliary nerves and fabric of the iris, it will be easily perceived that increased local arterial action and venal obstruction may cause various disorders. Compressions of the *nervuli* may likewise destroy action, and render the parts paralytic, &c.

The muscles that move the eye in the orbit may overact one another; one may be contracted, another too much stretched, hence obliquity of the globe, &c.

Palsies may happen from obstruction in the nervous influence.

Tumors of the adeps may likewise cause various disorders, especially if indurated, &c.

In Figures II. &c. The capsula of crystalline lens may be considered subject to all the disorders of membranes, as inflammation from an increased action of the arteries and too slow a circulation in the returning veins, &c.: hence impeded vision or opacity, hence the capsular species of cataract, &c.

1. It will appear rational that in all these instances of affections in minute vascular and nervous systems, that in dislodging these diseases, general and local evacuations are absolutely necessary.

2. A very dry diet.

3. The most penetrating remedies, as antiphlogistics, mineral alteratives, and tonics, become occasionally useful, according to the circumstances of cases and habits of patients.

In different Parts of the Work are interspersed some Remedies, the Composition of which is not delivered; their Names and Modes of Preparation are the subsequent:

I.

Lotio vitriolica.

℞. Vitriol. alb. gr. viij. solve in
Aq. rosar. ℥viij.

II.

Lotio mercurialis penetrans.

℞. Merç. corrosiv. sub. gr. j. solve accurate in
Aq. distillat. ℥viij.

III.

Lotio ophthalmica zincata.

℞. Florum zinci ʒss. solve in
Aq. rosar. ℥viij.

IV.

Lotio boracis detergens.

℞. Boracis gr. xv. solve in
Aq. distillat. ℥viij.

V.

Lotio mucilaginosæ arabicæ.

℞. Gum arab. elect. ʒj. solve in
Aq. distillat. ℥viij.

VI.

Lotio camphorata.

℞. Camphor. ℥ss.

Amygdal. decort. No. iij. tere simul deinde adde

Aq. pur. ℥viij.

VII.

Lotio mercurialis simp.

℞. Hydrarg. ℥ss.

Mucilag. gum. arab. ℥ij. M. accurate, deinde adde
gradatim

Aq. distillat. ℥viij.

VIII.

Lapis divinus.

℞. Nitri puri

Vitrioli cærulei

Aluminis crudi āā ℥viij.

Contrita & mista fluant in crucibulo, quibus sub finem
addatur

Camphoræ tritæ ℥ss.

Rite agitata refrigerentur.

IX.

Mucilago seminum cydoniorum.

℞. Seminum cydoniorum ℥ij.

Aq. flor. rosarum q. v.

Ut fiat emulsum mucilaginosum.

Sic etiam paratur

Mucilago feminum lini.

———— gummi arabici.

———— radicis althææ.

x.

Pulpa pomorum.

R_x. Pomorum dulcium q. f.
Coquantur in aqua, transprimantur per filtrum.

xi.

Albumen aluminosum.

R_x. Aluminis ʒj.
Albuminis ovi.
Aq. rosar. q. f.

Ut lege artis inspissetur, inter lintea oculo applicandus, aliquando in ophthalmia humida relaxata utile hoc remedium est.

xii.

Balsamum opthalmicum rubrum.

R_x. Butyri recentis non saliti & ab omni lactis fero liberati ʒiij.
Ceræ albæ ʒiij.

Liquefactæ super patinam ceræ admisceatur butyrum.
Invicem liquatis & in mortario exacte mixtus addantur.
Mercurii præcipitati rubri in subtilissimum pulverem triti ʒij. & gr. xv.
Exactissime ac diu terantur, donec perfecte refriguerit.
Ufus. Ad pterygia & maculas corneæ transparentis curandas quotidie bis corneæ affricatur quantitas ac majoris acus capitulum est.

This remedy ought to be used with great accuracy ; for, though highly recommended, I have known it to do mischief.

Directions to the Bookbinder.

Plate I.	opposite to	p. xi	Plate IV.	opposite to	p. xvi
— II.	— —	xiii	— V.	— —	xxii
— III.	— —	xiv	— VI.	— —	xxiv

A
T R E A T I S E
ON
DISEASES OF THE EYES.

On Diseases of the SUPERCILIA, or EYEBROWS.

MADAROSIS

IS a defect or loss of the eyebrows or eyelashes*, causing a disagreeable deformity or painful sensation in the eyes in a strong light.

There are three species of the *madarosis*.

The *spontaneous madarosis*, which is a symptom of the leprosy, or confirmed venereal affection. This, in general, is incurable, as the acrimony destroys the bulbous roots of the hairs. On the first appearance of this disease,

* The word is from the Greek *μαδαρος*; it is called, likewise, *ptilosis*, from *πτίλος*, *calvus*, or bald: others call it *milphosis*.

however, the falling of the hairs may be prevented by a weak solution of *vitriol. alb.* or by such astringent lotions.

The *second species* arises from shaving the eyebrows. These parts regenerate in the course of two years.

The *third species* owes its origin to the plucking out the eyebrows or eyelashes, which, however, grow again.

Phthiriasis of the EYEBROWS

Is a species of lice nidulating in the eyebrows or eyelashes of poor children, and is principally caused by a neglect of cleanliness †.

It is cured by anointing the part with mercurial ointment, or with an unguent composed of *merc. præcip. alb.* and common pomatum.

Wounds of the EYELID.

Large wounds of the eyelids have sometimes produced grievous symptoms ‡.

The species are ;

1. A *simple wound*, in which the integuments

* Ill. Halleri Physiologia, T. V. p. 38.

† Cl. Sauvages, in his *Nosologia Methodica*, gives an instance of an internal *phthiriasis* of the whole body.

‡ *Platner*. *Prolusio de vulneribus superciliis illatis*, and *Genga anatomia chirurgica*.

Only are wounded. This is to be cured by uniting the parts, and sustaining them with proper compress and bandage, if no bad symptoms appear.

II. A *complicated wound*, with a division of the *frontal nerve*, which passes through the *superciliary foramen*. This occasions an *amaurosis*, by destroying the influx of the nervous power; for the treatment of which, see *amaurosis*.

Diseases of the CILIA, or EYELASHES.

TRICHIASIS

Is the direction of the cilia, or eyelashes, towards the bulb of the eye*. This happens rarely in the superior, but not unfrequently in the inferior eyelid.

The effects of this complaint are a continual irritation of the cornea from the motions of the eye and eyelid; pain, inflammation, ulcers, specks, and sometimes opacity of the cornea, are the consequence.

There are two species; in one, all the cilia are inverted, called the *trichiasis totalis*; in the other, some of the cilia turn inwardly towards

* It is called, also, *trichosis*, from *τριχ.* *pilus*. Vide Cort-
num Diff. de Trichosi, and Heister. Diff. de Trichiaſi Ocu-
lorum.

the bulb of the eye ; this is denominated *partialis*.

The *radical cure* can only be effected by the destruction of the bulbs of the hair, according to most authors ; and this is performed by the evulsion of the hairs, and the application of actual, or other cauteries, to destroy the bulbous roots of the hair.

Cutting the cilia is fruitless, for they grow more rigid ; and plaisters to agglutinate the cilia with the lids, are unsuccessful ; for, on removing the plaisters, the hairs turn again in their former ill direction. I have, however, cured this complaint by repeatedly plucking out the hairs without the application of any caustic ; and this method should be patiently attempted before the less mild are adopted.

DISTICHIASIS.

Is a double series of the cilia ; one range of which grows in an outward, the other in an inward direction towards the globe of the eye.

This disorder is very uncommon, and the cure should be similar to the *trichiasis*.

Diseases of the PALPEBRÆ, or EYELIDS.

ANCYLOBLEPHARUM

Is a concretion of the eyelids *.

This concretion is total or partial; of which there are three species.

I. *Ancyloblepharum congenitum*, which is observed in new-born infants. The tarsus of the *palpebræ* in this species coheres, for the most part, in the external angle only.

The cure is easily effected by a cautious division of the united parts by a blunt-pointed knife.

II. *Ancyloblepharum adventitium*, which arises from inflammation, burning, or erosion of the margins of the *palpebræ*; hence an inosculation of the parts.

The dissection of the total cohesion should commence with a sharp-pointed bistory, and after should be continued by the capped bistory in the exact direction of the margin of the eyelids.

Afterward the vegeto mineral water may be frequently applied to promote the cicatrification of the edges of the lids.

III. *Ancyloblepharum spurium* is an apparent

* From ἀγκυλη, concretio, and βλέφαρον, palpebra.

concretion of the *palpebræ*, in which the margins of the cilia cohere by the exsudation of a glutinous puriform matter from the *glandulæ meibomianæ* in the night: It is a symptom of the *lippitudo*, and happens in the *small pox*.

The moistening the parts with warm milk and water, disunites, with a little force, the adhering parts; this must be repeated, while internal remedies are administered according to the circumstances of the case; nitrous to the plethoric and inflammatory; *cortex peruvianus* and other *tonics* to the debilitated, and *mineral alteratives* may be exhibited in cases of acrimony.

SYMBLEPHARUM, or an Adhesion of the EYELID
to the Globe of the EYE,

Is a concretion of the *palpebræ* with the eye,

This chiefly happens in the superior, but very rarely in the inferior *palpebræ*.

The *causes* of this concretion are a bad conformation of the parts, or from ulcers of the *cornea*, the *membrana conjunctiva*, or internal superficies of the *palpebræ*, or imprudent scarifications, or burns, especially if the eye remains long closed.

There are two species, the *partial*, or *total*; in the former, the adhesion is partial; in the latter,

latter, the *membrana conjunctiva* and *cornea* are concreted together.

The *cure* of both can only be procured by dividing the adhering parts with a careful incision.

After the operation it is necessary to put the eye into moderate motion, to prevent the re-adherence of the parts, and to apply a little fresh cream, or a mucilage of *femin. lini*, and afterward an astringent lotion.

BLEPHAROPHTHALMIA

Is an inflammation of the *palpebræ*, or eyelids; of which there are three species.

I. *Blepharophthalmia violenta*, which follows a contusion, or wound of the *palpebræ*, or the extraction of the cataract. It is cured by emollient and antiphlogistic fomentations; abstemious diet, particularly with regard to liquids; evacuations by bleedings and cathartics should be prescribed.

II. *Blepharophthalmia*, from the puncture of insects, as wasps, bees, or flies; this is cured by the vegeto-mineral water.

III. *Blepharophthalmia spontanea*, which arises from the deposition of some acrimony; as the *erysipelas*, scurvy, small pox, or measles.

It is cured by removing the causes; by eva-

cuants, by alteratives, or by remedies adapted to the particular case.

OEDEMA PALPEBRARUM

Is a soft, unpainful distention of the cellular structure of the eyelids.

The *proximate cause* is a congestion of serum in the cells of the *tunica cellulosa* of the eyelids, and is commonly a symptom of some other disorder : the species are,

I. *Oedema symptomaticum*, which accompanies the *anasarca*, or *chlorosis*.

This is cured by evacuants, bracers, and preparations of steel, with astringent lotions to the affected parts.

II. *Oedema idiopathicum*, from some cause existing in the *palpebræ* independent of the general habit of body. Emollient fomentations and cataplasms have produced this complaint ; and it is cured by cold bathings and astringent lotions, vegeto-mineral water, &c.

EMPHYSEMA PALPEBRARUM

Is a tumefaction from air in the cells of the *tela cellulosa*.

This horrid disease is commonly a symptom of the universal emphysema, or emphysema of the parts connected with the brain.

DISEASES OF THE EYES.

9

If curable, it must be by the removal of the universal emphysema; or removing, if possible, the causes.

ECCHYMOMA PALPEBRARUM

Is a reddish, or livid tumor of the *palpebræ*, from effused blood in the cellular membrane. There are three species.

I. *Ecchymoma violentum*, from a contusion or bruise of the *palpebræ*.

It is cured by venæsection, fomentations of the antiphlogistic class, the volatile liniment, or the vegeto-mineral water.

II. *Ecchymoma consecutivum*, which follows any contusion of the frontis, or neighbouring parts, and about the third or fourth day shews a coagulation of the cruor in the *tela cellulosa*.

It is cured by resolving the inspissated cruor, by which means it is absorbed; and this is effected by evacuants, warm fomentations of salt and water, volatile liniments, and antimonials.

III. *Ecchymoma spontaneum* is a livid colour, principally of the inferior eyelid; common in the scurvy, in the time of menstruation or pregnancy, and other internal indispositions.

The cure consists in removing the primary causes.

ATHEROMA

ATHEROMA PALPEBRARUM

Is an incised tumor, containing a pultaceous matter, in the superior eyelid, towards the external canthus or temples.

This tumor is moveable, indolent, of the colour of the cutis, and sometimes as large as a hazel nut or walnut, and often much larger.

Cure. — The incipient tumor should be attempted by resolvent fomentations of salt and water, sea water, and the *linimentum saponaceum*, vel volatile, oleum camphoræ, and vegeto mineral water.

The confirmed tumor requires operation.

Operation. — The skin covering the tumor being elevated between the finger and thumb, a transverse incision is first made, then the sac is to be separated from the *tela cellulosa* and extracted; or, at least, a major portion of the tumor is to be removed, and the remaining part is left to suppurate, or may be destroyed by escharotics.

These tumors, however, I have removed by the application of the *spiritus nitri fumans*, with the utmost safety, and without pain.

In which method, the skin not necessary to be preserved may be circumscribed by a pen or pencil dipped in the spirit repeatedly, and thereby the tumor is gradually destroyed.

The

The cure of these tumors is frequently effected by the bursting of the tumor, and the discharge of the contained coagulated matter; but afterward the cyst should be carefully destroyed by touching it with *spiritus nitri fumans*, or any other escharotic not soluble. The *lapis infernalis*, or similar caustics, are hazardous, for by dissolution they may destroy or injure the undiseased parts.

SARCOMA PALPEBRARUM

Is a fleshy excrescence on the eyelid.

There are two species of the *sarcoma palpebrarum*.

1. The *sarcoma penfile*, which hangs by means of a short stalk to the eyelid.

This may be cured by passing a ligature round the part nearest the eyelid, by which means, in a short time the excrescence falls off from the eyelid.

II. *Sarcoma sessile*, which is an excrescence, with a broad basis, on the eyelid.

This is removed by excision; but both the former and the latter tumors have been safely destroyed by the *spiritus nitri fumans* applied on the point of a pen; and in some cases an astringent lotion is sufficient for the purpose.

SCIRRHUS

SCIRRHUS PALPEBRARUM

Is a tubercle, or indurated tumor, in the superior eyelid. Its species are,

I. *Scirrhus benignus*, which is moveable, of the colour of the skin, and without pain.

The cure is effected by the use of *mineral alteratives* internally, and fumigations of *cinna-
bar* or *æthiops mineralis* externally; with bleeding, proper regimen, and antiphlogistics, of nitre, sal fodæ, &c.

II. *Scirrhus malignus*; this is attended with sharp pains, is of a livid hue, and has a cancerous tendency.

Its cure should be attempted by a mode similar to the foregoing, by which the tumor often resolves,

The cutting off these tumors is recommended by authors; but this method is replete with hazard and danger, and therefore should be *maturely* considered, and *cautiously* advised*.

CANCER PALPEBRARUM

Is a tubercle, or malignant ulcer of the eyelid, discharging an acrimonious humour, which

* I have known hemlock prescribed internally, and hemlock plaister mixed with *belladonna* applied externally, but always proved unsuccessful.

gradually

gradually destroys the surrounding parts by its corrosive quality.

The species of this horrid disorder are generally in the end fatal, if the progress of its destructive effects should not be prevented by a judicious application of mineral alteratives, cinnabarine fumigations, neutral salts, and an exact regimen, &c.

The species are,

I. *Cancer scirrhus* is a hard tubercle of the eyelid, tuberosc and joined with acute darting pains; frequently surrounded with livid varices.

II. *Cancer verrucosus* is a fleshy excrescence, with darting sharp pains, of a livid colour and varicose.

III. *Cancer nervens*, which arises from a *papula* of a livid red colour, with sharp pains, spreading into a broad foul ulcer of various colours, and callous edges, jagged and turning inwards*.

The writers who have had faith in Baron Storck, and his obsequious inconsiderate followers, recommend *cicuta*, *belladonna*, various narcotics, and acrid poisons, for the cure of the

* This distinction is unnecessary; for what authors have called the nervous cancer, is nothing more than the cancerous ulcer without any protuberance after the ulcer is formed.

foregoing

foregoing species of cancerous ulceration, the *succum sedi acris*, the flammula Jovis, and gentian, &c. but certainly without any real practical knowledge of the nature and causes of these complaints, or the most rational modes of treatment.

If the preceding empirical plans should not succeed, which to my certain knowledge they never have, and probably never will, the same writers, copying one another's absurdities, recommend the extirpation of the diseased parts by the knife. This cruel operation, as far as I have been able to observe, has only produced an accumulation of misery, and, unless under very favourable prospects of success, should never be attempted.

Cure.— The cure should be attempted by those penetrating remedies, which are likely to correct the prevailing acrimony, and remove the causes of disease. To answer these important ends, antimonials should be given as alteratives, but never as evacuants, joined with mercurials, *cinnabar antimonii*, *æthiops mineralis*, or *kermes mineralis*; *sulphur auratum antimonii*, and *mercurius dulcis sexies sublimatus præparatus* & bene lotus, united by long trituration; a grain pill of which may be given three or four times a day, with a solution of nitre, sal sodæ, and camphor, or any other preparation accommodated

modated to the particular case and constitution of the patient.

Externally should be applied fumigations of æthiops mineralis, or cinnabar factitium; fomentations, or lotions of the weak vegeto mineral waters; saturnine unguents, or any mild ointment which does not irritate the sore. If the ulcers are foul, the solutio mercurii corrosivi sublimati, four grains dissolved in a quart of water will be proper to deterge, and the præcipitate digestive applied on lint.

By these and similar means I have greatly mitigated the ravaging effects of the cancer of the eyelid, and, in some instances, a cure has been accomplished.

CARBUNCULUS PALPEBRARUM

Is a malignant inflammatory tubercle or ulcer, most commonly in the superior eyelid, which in a few days degenerates into a gangrene.

This disorder arises from some peculiar miasma of a putrid tendency.

Cure. — The bark and vitriolic acids should be given in large doses, and often repeated, with cordials.

Externally, scarifications are proper; fomentations of the *vegeto-mineral* water, with a
solution

solution of camphor; or a decoction of *coriæ peruvianus* with *tinctura myrrhæ* should be frequently applied. The fetid, sphacelated, or putrid parts, should be removed by art as soon as possible, lest by absorption the putrid fomes should taint the whole habit.

HORDEOLUM *

Is an inflammatory tubercle similar to a small boil in the margin of the eyelids.

The *proximate cause* is an inflammation of the Meibomian glands.

The *remote causes* are acrid congestions, suppressed transpiration, a deposition of scrophulous or venereal acrimony, and it is common to infants.

Prognostic.—It is rarely resolved, and for the most part terminates in suppuration; when it returns annually, which sometimes happens, it leaves a little round induration.

Cure.—Its resolution should be first attempted by the *vegeto-mineral* water often applied warm, with antiphlogistic purgatives.

If the resolution should not be affected, then suppuration should be promoted by any soft innocent unguent, which must not touch the eye itself.

* Græcis vocatur *νεῖδε*.

When the part is perfectly matured, the pus should be gently squeezed out, and the little cyst should be cautiously destroyed by a slight touch with the *spiritus nitri fumans* on the point of a pen, to prevent deformity.

The *hordeolum* frequently returns from any specific acrimony in the habit, as the scurvy, scrophula, lues venerea, or from any degeneracy in the fluids. The cause being first investigated, proper internal medicaments should be prescribed.

CHALAZION

Is a moveable tubercle, without pain or discoloration, in the margin of the eyelids*.

The species are,

I. *Chalazion scirrhusum*, which is a hard, unequal tubercle, arising from an ill-treated *hordeolum*.

Cure.—The resolution should be first attempted by the *emplastrum mercuriale*, or vegeto-mineral water with camphor.

If the resolution should not be obtained, the suppuration of the tumor should be produced by any safe escharotic.

II. *Chalazion canerosum* is a tuberosc tubercle, with darting pains, of a livid colour, arising

* *Latinis vocatur grando.*

from a cancerous acrimony, and is to be treated as a cancer of the eyelids.

III. *Chalazion cysticum* is a smooth, soft, indolent, undiscoloured tubercle.

The cure is performed by three modes.

I. By *resolution*; this is to be attempted by the emplastrum saponaceum, mercuriale, or emplastrum cicutæ, or unguentum basilicon cum camphora.

II. By *erosion*, which is done by escharotics.

III. By *incision* of the tumor in an horizontal manner; after which the suppuration of the sac is to be promoted by escharotics and digestives.

Chalazion terreum is a most hard tubercle, containing calcareous particles, and is curable by no other means than excision*.

HYDATIS PALPEBRARUM

Is a pellucid vesicle, containing serum in the margin of the eyelids.

The *proximate cause* is an elevation of the epidermis by an aqueous fluid.

The cure requires an incision on the vesicle, and an exsiccation of the parts; this last is effected by the *vegeto-mineral* water, or a light vitriolic lotion.

* It is called *lithiasis*, seu *lapis palpebralis*.

MILIUM PALPEBRARUM

Is a small, hard, white tubercle, equal in magnitude to a millet seed.

The *proximate cause* is an atheromatous matter collected under the epidermis.

The *cure* requires an incision on the epidermis, by which means the hard *molecula* may be pressed out.

MORUM PALPEBRARUM

Is a mulberry-coloured tubercle, soft, and without pain, chiefly on the upper eyelid.

This originates from nativity, and cannot be cured but by destroying the *rete mucosum* under the cuticula by a vesicatory, or some such mode, and then an eschar appears afterwards, looking rather disagreeably.

VERRUCÆ PALPEBRARUM

Are *verrucae*, seated on the margin of the eyelids.

This evil is principally obnoxious to the aged, and are predisposing to the cancer.

The most frequent species are,

i. *Verruca penfiles*, which hang by a little stalk, and are easily removed by excision or ligature.

A much easier method is to touch, or circumscribe the parts to be removed by a pen dipped in the *spiritus nitri fumans*, which destroys the disease without pain or inflammation.

II. *Verrucæ sessiles*, which have a broad basis, and are cured by excision, or by the *spiritus nitri fumans*.

III. *Verrucæ cancriferae*, which are painful, livid, cancerous, and varicous; for the cure of which, see the cure of the *cancer palpebrarum*; or they may be extirpated in the same manner as the former, carefully avoiding any injury to the eye, and repeating the operation until all the diseased part is consumed.

TRACHOMA

Is an asperity in the internal superficies of the eyelid *.

The *effects* are a severe pain, and a violent ophthalmia, as often as the eyelid moves.

The *species* are,

I. *Trachoma sabulosum*, from sand falling between the eye and eyelid of persons travelling, blown by a high wind; this happens chiefly in fabulous situations, and may be prevented by spectacles for the purpose, or by guarding against the flights of sand by covering the eyes.

* Trachoma is derived from *τράχης*, aspero.

It is cured by a thin mucilage of linseed, or gum arabic, or by the *extractum saturni* diluted, having previously extracted the irritating particles.

II. *Trachoma carunculofum*, which arises from caruncles, or fleshy *verrucae*, growing on the internal superficies of the eyelid*.

It is cured by cutting off the caruncles with scissars, or by destroying them carefully with the *spiritus nitri fumans*.

III. *Trachoma herpeticum*, which are hard pustules in the internal superficies of the eyelids†.

It is cured by the application of a weak solution of the *mercurius corrosivus sublimatus* externally and internally prescribed, or by the *pilula rubra*.

BLEPHAROPTOSIS

Is a prolapsus of the superior eyelid covering the cornea.

* This species of the *trachoma* is called *morum palpebræ internæ*, because the tuberculous internal superficies appears of a livid red like a mulberry. Others call these *carunculæ pladorotes*.

† This is also called *sycofis*, seu *palpebra fycosa*, from its resemblance to granulated substances in a cut fig. With the Greeks it is nominated atoniabilepharon, or proptosis; by the Latins, prolapsus palpebræ superioris.

There are six species of this disease, which are,

i. *Blepharoptosis ab atonia*, or a relaxation of the muscle called *levator palpebræ superioris*.

Causes.—Chlorosis, debility or relaxation of the whole body, a long absence of motion from the eyelid being covered with bandage, or emollient poultices.

Cure.—Cold water applied with a sponge. Internally, bark, steel and other tonics, antimonials, mercurials, and aloetics.

ii. *Blepharoptosis paralytica*, or a palsy of the levator muscle. This is commonly accompanied with an *amaurosis* or *gutta serena**, and not unfrequently with a palsy of the cheek, tongue and jaw, and is a symptom of the apoplexy or paraplegia.

Causes.—Suppression of the menses, hæmorrhoids, or contusion of the eyelids, or an atonia or compression of the nerve going to the part.

Cure.—Antiparalytic remedies should be ad-

* I cured a remarkable case of this nature in a young girl, whose menses were obstructed. The disease succeeded the administration of a vomit, in which, beside the relaxation and total want of power to raise the eyelid, there appeared an extraordinary dilatation of the pupil, loss of motion, in short, a palsy of the part. This patient had been discharged as incurable from a principal hospital in the city. The cure was effected by *calomel* and *aloetics*, *bark*, *elixir of vitriol*, and *cold bathing* the part. See Cases.

ministered,

administered, not those commonly used, for they seldom produce a cure, but those which are likely to remove causes: these are mercurials and antimonials given in small doses at proper distances, and continued, so as to raise a gentle and constant perspiration. The *tartarum emeticum* may be given from a quarter to half a grain, joined with camphor and volatiles, *quarta vel sexta quaque hora*, James's powder, or the *pilula rubra* ad gr. j. vel ij. *ter de die cum camphora*, and gr. fs. vel gr. j. *mercurii dulc.* occasionally with some aloetic. *Sinapismi* to the feet, and *vesicatoria nuchæ scapulis brachiis pedibusque applicanda*. *Balnea tepida*, composed of common salt and warm water, with frictions, &c. By such means paralytic affections may be frequently cured*; but seldom by volatiles and heating cordials only.

In this partial palsy, however, of the eyelid, and dilatation of the pupil, the causes must, as much as possible, be removed by remedies applicable to the patient's constitution.

Internally, the remedies already recommended, if the patient be of a florid complexion; if pal-

* A lady, aged eighty-four, a patient of Mr. Hogarth's, surgeon, in Swallow Street, who had undergone three severe strokes, I cured in the above manner. She had lost her speech, and the entire use of one side of her body. It is now near three years since she recovered, and she walks about her house in health.

lid, preparations of steel and other tonics will be most eligible, and *arnica*, &c.

Externally, the *lotio ophthalmica penetrans** should be used, by being dropped in between the eye and eyelid, with considerable friction of the parts, so as to excite heat, and a temporary inflammation on the eye; especially if the obstruction extends, so as to compress the arterial system, which is known by pallidity and coldness of the parts.

The eyelid, likewise, may be well rubbed with *liquor anodynus mineralis* and *tinctura succini*, or *oleum fœniculi*, after using a fomentation of the cephalic herbs.

If these do not succeed, fumigations of cinabar factitium, or æthiops mineralis, up the nose, and to the internal canthus of the eye, will be proper.

As the *nervus orbitalis* passes through the *foramen orbitale*, and the paralysis, or loss of motion in the eyelid, may arise from compression, or something acting in the nature of a ligature on the nerve and orbital artery, the warm fomentations, and other applications, should be placed on the lower part of the forehead, so as to act as much as possible on the superior part of the nerve near the foramen, which is placed almost in the center of the eyebrow.

* See the formula.

Dissections *post mortem* have convinced me that palsies in general arise,

1. From an increased accumulation and inspissation, or coagulation of the oleaginous fluid in the *tela cellulosa*.

2. This may happen in the tunics of the nerves, or in adipose parts surrounding nerves.

3. During the distension of the cellulous structure of the parts, the veins lose their powers of absorption.

4. Though the minutest veins lose their office of absorption, yet the arteries carry blood to the part affected, as long as it is capable of receiving any.

5. When the parts are so distended as to receive no more blood from the arteries, the fluid destined to the part passes off by anastomoses, or collateral branches.

6. When the arterial system ceases to act in the diseased part, heat being altogether lost, and the artery and nerve of the part compressed by the fluid coagulated, both heat and motion cease, and a palsy is the consequence.

7. Palsies likewise arise from laxity of the tunics of the nerves.

8. From a defect in the *principium agens nervosum* in the encephalon, or in the different ramifications

mifications of the nerves, either of the organs of the senses, or spinal branches.

9. From an aneurism, and then it is joined with coldness, pallor, and an *atrophia* of the part.

10. There are, likewise, other causes, which may be investigated, and by judicious practice sometimes cured *.

A philosophical examination of the palsy must demonstrate the difficulty, and sometimes impossibility of cure : for,

1. It requires an action on the minute arterial system of the diseased part, so as to resolve the impacted and coagulated fluid.

2. The venal system must be sufficiently pervious and elastic to absorb the resolved mass.

3. Fresh vigour and energy must be given to parts which have lost action, and whose cellular interstices of muscles and their fibres are all in a morbid state.

The common modes of treatment are quite inadequate to these purposes. Foetid gums and cordials may warm the stomach and diminish sensibility, but answer no well-founded intention of cure.

The disorder is deeply seated in the human

* See this class of diseases in my *Schola Medicinæ Universalis Nova*, with the rational modes of cure,

frame, and therefore should be vigorously attacked, according to the strength of the patient and nature of the case, by antimonials, mercurials, &c. in small doses, in conjunction with the most approved modes of cure, avoiding all remedies that diminish the moving powers or sensibility.

Externally. The applications should be directed by a clear knowledge of the distribution of the nerves. Electricity may be applied.

III. *Blepharoptosis spasmodica*, or a spasmodic contraction of the *musculus orbicularis palpebrarum*. This species suddenly appears and disappears, and is familiar to the hypochondriac, hysterical, and persons subject to worms; and it may likewise arise from *saburra* in the stomach or intestines.

It is cured by antispasmodics and nervous remedies, by vermifuge purges, aloetics and calomel, &c.

IV. *Blepharoptosis*, from a tumor of the palpebra drawing it down.

This may be referred to the *atheroma*, *lipoma*, and *schirrus* of the palpebra.

It requires the excision of the tumor.

V. *Blepharoptosis*, from a swelling of the whole superior eyelid.

This species belongs to the inflammation,
oedema,

oedema, emphysema, and ecchymosis of the palpebra.

Cure requires purges, antiphlogistics, and discussing fomentations.

VI. *Blepharoptosis*, from an elongation of the cutis of the eyelid.

This happens from an ill-cured transversal wound of the eyelid, or arises in old age.

It is easily distinguishable from an *atonía* of the levator muscle; for by elevating the cutis between the finger and thumb, the muscle contracts; but in an atonia of the muscle, when the cutis is elevated, the muscle remains relaxed.

The *palliative cure* is to elevate the cutis and fix it firm to the frontis by means of an adhesive plaster.

The *radical cure* requires that the relaxed cutis should be elevated and transversely cut off; then the wound of the cutis is to be well united with an adhesive plaster, and in this manner cured*.

VII. *Blepharoptosis*, from a wound of the le-

* The instrument invented by Bartisch, and improved by Ruyfch and Heister is unnecessary for this operation, for it bruises the parts; a knife, or side of a lancet, are better, because they wound with less contusion, and the cutis will unite by the first intention.

levator palpebræ muscles, or the transverse dissection of the frontal.

Cure, by a future of the wound, and proper bandage.

VIII. *Blepharoptosis periodica*, which returns at stated times.

Cure, by bark, tonics, and cold bathing the part.

LAGOPHTHALMUS

Is the want of power to close the eyelid*.

Effects.—If dust fall between the globe of the eye and eyelid, it irritates the conjunctiva and cornea, and is productive of inflammation and obscurity of vision.

The species of this disease are,

I. *Lagophthalmus spasmodicus*, or a spasmus of the *musculus levator palpebræ superioris*.

This species is common to the hypochondriac, hysteric, convulsed, and verminous, and it is sometimes observed in acute fevers.

The cure requires antispasmodics and the removal of the primary causes.

Externally, emollient fomentations and cataplasms joined with opium.

* Α λαγώς, *lepus*, & ὀφθαλμός, *oculus*; hinc Latinis *oculus leporinus* vocatur, because it has been credited, that hares sleep with open eyes.

II. *Lagophthalmus paralyticus*, or a palsy of the *musculus orbicularis palpebrarum*, which is an antagonist to the levator; from hence the *levator palpebræ* perpetually contracts itself.

The *cure* requires antiparalytic remedies, *arnica*, &c.

III. *Lagophthalmus*, from an atonia of the *musculus orbicularis palpebrarum*.

This species is observed among old people, from much watching, debility, and inanition.

The *internal cure* requires corroborants and nutritious diet, and wine.

Externally may be applied cold eyebaths, nerve frictions of *oleum fœniculi*, linimentum volatile, &c.

IV. *Lagophthalmus*, from a longitudinal fissure of the palpebra, by which the *musculus orbicularis* is divided.

This division can happen from a wound, or the disease called *coloboma*.

The *cure* is effected by the cure of the fissure in a manner similar to the cure of the *bare lip*. See *Coloboma*.

V. *Lagophthalmus*, from *exophthalmia*, which forcibly raises the eyelid. This can be also referred to the *magna encanthis*.

The *cure* requires the removal of the primary causes.

VI. *Lagophthalmus*, from a tumor between the orbit and *musculus levator palpebræ*.

Effects.—Such a tumor by its pressure irritates and abbreviates the muscle. It is known by the touch.

The *cure* requires the excision of the tumor.

VII. *Lagophthalmus*, from the contractility of the *musculus levator palpebræ*.

Infants in a cradle looking towards a window, and from a bad custom of looking upward, that they may see light, cause this complaint.

The *cure* requires placing the child in such a position as to prevent this bad habit; or emplasters should be applied to bring the eyelid down to the cheek, and in a few weeks the child will look downward.

VIII. *Lagophthalmus*, from a cicatrix, which either a wound, ulcer, or burn, on the eyelid, cheek, or forehead has occasioned, and which strongly contracts the cutis of the palpebra.

Cure.—If emollients and emplasters to draw down the skin should not succeed, the operation for the disease should be instituted.

IX. *Lagophthalmus*, from a natural brevity of the cutis of the eyelids.

Seat.—This abbreviation is always seated in the

the cutis alone, and rarely or never in the levator muscle.

The Cure. — If cataplasms and emollient ointments, or plasters, applied to the cheek and eyelids, fail, then the operation is to be performed.

Operation. — 1. Make an incision across the superior eyelid in the part where the transversal fold or *plica* is naturally formed.

2. Then the superior edge of the wound is to be retained by an adhesive plaster to the forehead, and the inferior margin of the incised wound by another emplaster applied to the cheeks; the skin must be drawn asunder as much as possible, and cicatrised in this manner.

3. If the prolongation of the cutis is not sufficient, a second wound must be inflicted through the skin, and it must be drawn towards the cheek, and retained by an adhesive plaster.

4. In this manner the wound is cured with a broad cicatrix, and the contraction removed.

x. *Lagophthalmia partialis.* Whenever the cutis of the palpebra is partially contracted, either naturally, or from a cicatrix, the incision need only be made to liberate the part contracted, and treated in the foregoing manner.

ECTROPIUM

Is an extraversion, for the most part, of the inferior eyelid; by which the internal superficies of the lid turns outwardly, and appears in the form of red flesh*.

This disorder commonly is in the inferior eyelid, and rarely in the superior.

Effects are a disgusting deformity; and if the red fleshy margin projects from the eye, there is perpetually a shedding of tears, a foulness of the bulb of the eye, and frequent inflammation from pressure and friction, and a callous degeneracy of the part.

The *proximate cause* is too great a brevity in the formation of the cutis of the palpebra.

The species of the *ectropium* are,

1. *Ectropium*, from an intumescency of the internal membrane of the palpebra. This is observed in scrophulous, venereal, catarrhus subjects, and likewise in the humid ophthalmia.

The *cure* is effected by proper internal remedies, agreeably to the causes, or acrimony which gives origin to the disease.

The scrophulous, by mineral alteratives, nitre, &c.

* It is derived from ἐκτρέπω, evertō. In French it is called *renversement*.

The venereal, by mercurials.

The catarrhus and humid ophthalmia, by evacuants, and a very *dry diet*, and proper evacuations. See ophthalmia.

Externally.—1. Astringents are to be applied, as aqua vitriolata, aluminosa, aqua frigida, &c.

2. Caustics, as the *butyrum antimonii*, or a solution of *lapis infernalis*, have been recommended: but as the *spiritus nitri fumans* destroys without pain, and will not dissolve, or spread its effects farther than where it is applied, it is quite superior for this purpose as a caustic.

R̄. Spt. nitr. fumant. q. v. cum quo tumor caustissime illiniri debet ope penicilli.

3. The tumified parts are scarified, and *altero die unguentum ophthalmicum cum præcipitato rubro applicandum*, until the diseased parts are consumed by suppuration.

4. If these modes of cure should not avail, then the tumid membrane is to be elevated by a probe and cut off transversely.

The operation being performed, lint, moistened in vegeto-mineral water, is to be placed between the bulb of the eye and the palpebræ, lest these parts grow together. Lint and proper bandage should be applied to the eyelid for a few days.

II. *Ectropium*, from a cicatrix either in the inferior eyelid or cheek. This succeeds to wounds, ulcers, and burning of these parts.

If the evil is slight, the cutis is softened by the unguentum ex althea, and by the application of emplastrum simplex, vel diachylon. If this method should not cure, an excision of the internal membrane is necessary.

III. *Ectropium*, from a shortness of the cutis, forming the external superficies of the palpebra.

In this species the internal membrane is too long and tumified.

The *cure*.—If the internal membrane cannot be contracted by astringents, the best method is to remove by excision this part of the membrane.

The *incision* of the cutis, however, is almost ever unsuccessful; therefore it had better, perhaps, in most instances, be avoided*.

IV. *Ectropium*, from a wound or ulcer of the internal membrane of the eyelid. In the action of the *musculus orbicularis palpebræ* the wound is dilated.

This species may be called *ectropium partiale*. The same is observed if a *coloboma* or fissure is seated in the middle of the inferior eyelid.

* Memoires de l'Acad. de Chirurgie de Paris. Tom. v.

The *cure*.—It requires the removal of the ulcer, coloboma, or wound, which diseases may be referred to.

v. *Ectropium*, from an atonia of the *musculus orbicularis palpebrarum*.

This accompanies old age, and those afflicted with an habitual humid ophthalmia.

The *cure* should be attempted by corroborants and tonics, the cortex peruvianus, vitriolic acids, chalybeate preparations, valerian, and other nervine remedies.

Externally, the cold eyebath and astringent lotions are proper.

In old age the cure is difficult, and sometimes altogether impossible.

vi. *Ectropium*, from a *sarcoma* in the internal superficies of the palpebra, which frequently grows out from ulcers of this internal membrane.

The *cure* consists in the excision or destruction of the sarcoma, and the exsiccation of the ulcer.

vii. *Ectropium*, from an atheroma of the palpebræ in the internal superficies. This is known by the touch.

The *cure* is performed by the excision of the tumor.

viii. *Ectropium*, from an *exophthalmia* or *en-*
canthis,

canthis, which presses outwardly and downwards the inferior eyelid.

The cure consists in removing the primary causes.

IX. *Entropium stimulum*. There have been instances of boys by bad example and habit, who have inverted the upper and under eyelids by their fingers.

ENTROPIUM

Is an intraversion of the eyelid, by which the *tarsus* of the eyelids with the eyelashes are turned inwardly toward the bulb of the eye.

Effects.—Deformity, *trichiasis*, and the worst species of the *ophthalmia*. See *Trichiasis*.

The species are,

1. *Entropium*, from a contraction of the internal membrane of the eyelids.

The cure consists in plucking out the *cilia* or eyelashes, and alleviating the *ophthalmia*; then the external cutis of the palpebra should be dissected transversely, or some portion should be cut off, and the wound should afterwards be cicatrised*. I prefer removing the cause by the *spiritus nitri fumans*, which, however, must be done with great caution, gently, with

* Thus the celebrated Arcel cured many such cases.

a steady hand, and on the point of a writing pen dipped in the spirit.

II. *Entropium*, from a cicatrix of the internal membrane of the eyelids, which follows the cure of an ulcer.

The *cure* is the same as the former.

III. *Entropium*, from a tumor of the palpebra, which presses the *tarsus* and eyelashes inwardly.

The *cure* requires the removal of the tumor.

To perform any operation on the under part of the eye, my *speculum oculi*, which will be recommended in the operation for the cataract, will be useful. It acts on the bones of the orbit without pressing on the globe, and when applied with gentle pressure inverts the eyelid, so that the operator may easily operate on that part, without injuring the eye itself, or putting the patient to unnecessary pain.

PSOROPHTHALMIA

Is a scabby eruption, or itchlike pustules, occupying the eyelids and their margins.

The *proximate cause* is an acrimony deposited in the glands of the eyelids.

The species of the *psorophthalmia* are,

- I. *Psorophthalmia crustosa*, which forms dry
or

or humid crusts in the margins of the eyelids.

The *cure* is effected by solution of camphor, in the form of a fomentation, or by the use of the solutio merc. corros. to which camphor may be added. This is much more adequate to the purposes of removing glandular obstruction than any other preparation.

Internally; cathartics, correctors, metallic alteratives, and a strict regimen, are beneficial, according to the prevailing acrimony.

II. *Psorophthalmia herpetica*, in which small papulæ, itching extremely, and terminating in scurf, are observed.

The *cure* is often performed by the aqua yegeto mineralis camphorated, by sulphureous lotions, and by the solutio merc. corros.

The internal remedies recommended in the former species will be useful.

RUBOR MARGINUM PALPEBRARUM

Is a swelling and redness of the eyelids.

The *proximate cause* is a chronic inflammation of the *perichondrium*, which invests the tarsus of the eyelids.

The species are,

- I. *Rubor acrimoniosus*. Every species of acrimony,

A TREATISE ON

mony, almost, particularly the cancerous*, may induce a redness of the eyelids.

The *cure* is often effected by aqua vegeto-mineralis, or the mercurial solution, with proper internal remedies and a dry regimen.

II. *Rubor*, from a *lippitudo*. In this species the limbus of the eyelid is very tumid, and covered with a puriform mucus. See *Lippitudo*.

III. *Rubor symptomaticus*, which accompanies the *bordeolum*, *blepharophthalmia*, and other diseases of the eyelids.

The *cure* consists in removing the cause.

IV. *Rubor senilis*, which arises from an atonia of the palpebra.

The *cure*.—If this disorder is not cured in aged persons by vegeto-mineral water, or gentle astringent lotions, or the cold eyebath, it is frequently incurable: but it may be much palliated by proper external applications; such as have been just mentioned.

TYLOSIS

Is an indurated or callous thickness of the margins of the eyelids.

* The celebrated *Schmucker* dissuades us from amputating the cancerous breast if a redness appears on the eyelids, as he says it indicates the cancerous acrimony to be in the habit. This, however, is not always true. See my *Treatise on Cancers*.

The

The *proximate cause* is congestion of an inspissated, stagnating, and glutinous humour in the sebaceous glands, or cells of the margins of the eyelids.

The species are,

I. *Tylosis callosa*, which originates from a dry inspissation of the palpebral margin.

The *cure*.—It has been cured by a cataplasm of milk, folia cicutæ, camphora, and semina lini, and mercurials internally.

The methods which I have found successful are fomentations of emollient herbs and camphor, the solutio merc. corros. unguentum mercuriale and camphor to the lids, metallic alteratives, with nitre and camphor internally.

The application of poultices is extremely hazardous, for they often suppurate the eye and cause blindness.

II. *Tylosis indurata*, which arises from the glandulæ Meibomianæ being indurated in their whole limbus.

The *cure* is effected by the *balsamum ophthalmicum rubrum*, and the remedies recommended in the last species.

VULNERA PALPEBRARUM

Are cruentous solutions of the eyelids.

The

The species are,

I. *Vulnus non penetrans*, by which the cutis only of the palpebra is longitudinally or transversely divided.

The cure is performed without suppuration by the black sticking plaister, under which may be first applied lint dipped in *balsamum traumaticum* and placed as a compress, the divided parts having been first brought in exact opposition.

II. *Vulnus penetrans longitudinale*, by which the whole thickness of the palpebra is divided.

The cure should be attempted by means similar to the former, with compresses on each side the lips of the wound, and proper bandage, by which the parts often unite. “*Cartilago dissecta neque augetur neque coalescit*,” says Hippocrates.

III. *Vulnus abscindens palpebram*. Such a wound exposes the cornea, and whole bulb of the eye, and frequently destroys vision.

The cure should be attempted with light dressings, so as not to press on the cornea.

The patient should be kept quiet.

The other eye should be shut and bound up to prevent motion.

As the granulations of flesh shoot forth, the
external

external edges should be kept down by light escharotics.

Antiphlogistics or bark should be prescribed according to the circumstances of the case *.

IV. *Vulnus commissuræ internæ palpebrarum*. This occasions an *ectropium* of the eyelid.

Its cure should be attempted by an uniting emplaster.

FISTULA PALPEBRARUM

Is a small, narrow, and sinuous ulcer in the eyelid.

The species are,

I. *Fistula palpebrarum simplex*, which penetrates the substance of the eyelid.

The cure is effected by applying a small sponge tent dipped in some of the *balsamum ophthalmicum*, to keep open the exterior orifice and produce a good digestion. Over this should be applied lint, with unguentum basilicon or dialthea. When the wound is properly digested, slight compresses should be skilfully placed on the end of the sinus, that the divided parts may be disposed to inosculate, over which proper bandage.

* When I was in His Majesty's service in the war before the last, in the years 1761 at Belleisle, in 1762 and 1763 in the *West Indies* and *Havannah*, I have seen such wounds happen from splinters in sea engagements, but they were rarely cured.

II. *Bis-*

II. *Fistula palpebrarum in saccum lacrumale penetrans*, which arises from a purulent intumescency or rupture in the inferior eyelid.

The *cure* consists in opening the tumor of the lacrymal sac. The disease in which part being cured, the fistula of the eyelid heals with facility.

COLOBOMA

Is a gaping or hiatus in the palpebral margin, which imitates the hare lip.

This induces a disagreeable deformity, and a species of the partial ectropium.

It arises from a bad formation of the part, or from a wound of the palpebral margin.

The *cure* consists in making an incision on the callous edges.

The divided parts are then to be brought in union.

They are lastly to be retained by a needle and thread twisted across in the same manner the hare lip is cured.

NICTITATIO

Is an involuntary opening and shutting of the eyelid.

The *proximate cause* is a convulsion of the muscles of the eyelid.

The

The species are,

i. *Nictitatio connata*, which arises from a bad custom.

The *cure* consists in opposing this bad habit, and by binding up the eyes alternately.

ii. *Nictitatio*, from any heterogeneous matter falling on the eye.

The *cure* is effected by the removal of the extraneous body.

iii. *Nictitatio*, from saburra in the primæ viæ, or from worms in the intestines.

The *cure* requires purges and anthelmintics.

iv. *Nictitatio*, from timidity. This species happens in the operation for the cataract, and is very incommodious to the operator.

Its *cure* requires more resolution and calmness in the patient.

v. *Nictitatio symptomatica*, which is a symptom of some other convulsed disease.

The *cure* depends on the removal of the primary affection.

SPASMUS PALPEBRARUM

Is an involuntary and permanent contraction of the eyelids.

It is known by a rigid contraction of the eyelid, which can scarce be opened by the fingers.

The

The species are,

I. *Spasmus*, from faburra in the primæ viæ, which is cured by purges and medicines adapted to the cure of worms.

II. *Spasmus*, from an heterogeneous mass falling on the eye, which is remedied by the removal of the cause.

If the offending matter cannot be easily discerned by opening the lid with the fingers, the speculum oculi may be applied, and the lids inverted; by which the extraneous body will come in view, and be removed by a fine hair pencil, or feather, &c.

III. *Spasmus symptomaticus*, which is a symptom of some other disease, and is cured by antispasmodics, and by removing causes.

IV. *Spasmus*, from an ophthalmia. This arises in inflammation of the membranes of the eye, by which the patient cannot endure the light; and is cured by the removal of the ophthalmia. See Ophthalmia.

V. *Spasmus*, under the operation of the cataract.

It happens in subjects very timid, nervous, and irritable.

To such, before the operation is attempted, an oleaginous draught with laudanum is necessary.

When

When I formerly operated, however, I never found any necessity for this practice; for by holding the lids firm with my speculum, no such contraction could happen.

PRURITUS PALPEBRARUM

Is an itching sensation of the eyelids, which invites friction to the parts.

Seat.—It is commonly in the internal of the eyelids.

The species are,

I. *Pruritus*, from suppressed transpiration, which is observed in the morning amongst catarrhus and rheumatic persons.

II. *Pruritus*, from a commencing *hordeolum*, which is cured by *aqua vegeto mineralis*, or any slight astringent lotions.

III. *Pruritus*, from acrid ingestions, which happens to the votaries of Bacchus, and is cured by sobriety and light stomachic purges of the aloetic class.

IV. *Pruritus*, from an *herpes* of the eyelids, and requires the cure of the herpes. See Pso-
rophthalmia.

MORBI VIARUM LACRIMALIUM.

SCHEROMA

Is a dryness of the eye from the want of the lacrymal fluid.

Effects.

Effects.—The lacrymal fluid being deficient, the eyes become dry, and in their motions produce a sensation as though sand, or some gritty substances, were between the eye and the eyelid, the vision is obscured, the globe of the eye appears foulish and dull, which is a *bad omen* in acute diseases.

The species are,

I. *Scheroma febrile*, or a dryness of the eyes, which is observed in fevers, complicated with a phlogistic density of the humours.

It is *cured* by humectantia externally, as vapours of *aqua pura*, or solution of camphor, &c. Internally, antiphlogistics are to be prescribed.

II. *Scheroma exhaustorum*, which happens after great evacuations, and in persons dying.

The *cure* of those exhausted patients requires apt nutriment.

III. *Scheroma inflammatorium*, which is a symptom of the ophthalmia sicca.

It requires the cure of the ophthalmia by evacuations, or other means according to its species, and an artificial humidity, either from vapors, or by the *lotio juvans antiphlogistica*.

IV. *Scheroma itinerantium*, or the dryness of the eyes, which happens in sandy places to travellers, as in hot Syria, or from dry winds, which dries up the humidity necessary for the motions of the eye.

The *cure* is effected, or the complaint palliated, as the last species, or by collyriums of quince seed, decoction of linseed, or warm milk and water, or by an emulsion of almonds.

EPIPHORA

Is the superabundant flowing of a ferous or aqueous humour from the eyes,

Origo.—The origin of this humour is not only from the lacrymal gland, but, likewise, from the pores of the cornea and conjunctiva; the internal superficies of the eyelids, the *glandulæ Meibomianæ*, and the *caruncula lacrumalis*, contribute to this secretion.

The *proximate cause* of an *epiphora* is an *increased secretion* of the lacrymal fluid or humour, or an *impeded absorption* of the humours.

The species from an *increased secretion* are,

1. *Epiphora*, from a stimulus seated between the globe of the eye and lids, as from sand, acrid fumes or vapors, or from the *trichiasis*.

The *cure* requires the removal of the irritating cause.

II. *Epiphora inflammatoria*, which is a symptom of the humid ophthalmia. It is cured by the cure of the inflammation. See *ophthalmia*.

III. *Epiphora acrimoniosa*, which arises from the rheumatism, gout, small pox, measles, the

E

veneréal

venereal disease, king's evil, or from suppressed transpiration.

Effects.—These various acrimonies irritate the secretory organs of the tears, and excite an increased secretion.

The margin of the eyelids and the cheeks are sometimes inflamed, or excoriated, by the flowing out of the acrid ferous humor.

The *cure* consists, 1. in the derivation of the acrimony to another place.

2. The diminution of the quantity of fluids,

3. The particular acrimony must be corrected or cured.

1. These objects will be answered by purgatives, diaphoretics or diuretics, by blisters, setons, or issues.

2. Correctors of acrimony, mineral alteratives, antimonials, and mercurials, are to be given; always recollecting the contraindications, which ever require the skill of an able physician.

Externally.—The *aqua vegeto-mineralis*, or mucilaginous lotions of *semin. cydonior. lini*, or *amylum*, will be proper; and if from laxity, gentle astringents.

IV. *Epiphora*, from a laxity of the pores of the cornea, conjunctiva, or glandulæ lacrymales.

les. This is *known* by the humidity of the cornea, and the absence of redness or pain.

The *cure* requires corroborants and tonics, as *cortex peruvianus*, and various chalybeates.

Externally ; cold bathing to the eye, collyrium vitriolatum and camphoratum, or weak brandy and water, conduce to the palliation of the symptoms, and assist in the cure.

The species of the *epiphora*, from an impeded absorption of the tears, or from the lacrymal passages being impervious, are,

I. *Epiphora*, from a concretion of the lacrymal canals.

This arises from burns or exulceration, and is known by the exploration or inspection of the *puncta lacrymalia*.

The *cure*.—I. The concreted orifice must be opened by the means of a small ocular probe introduced carefully into the external orifice with gentle perforation.

2. The *saccus lacrumalis* should be opened by incision, the canalis also and the *punctum lacrumale*.

II. *Epiphora*, from the obstruction in the nasal duct.

This species is accompanied commonly with an *hydrops lacrumalis*, and requires the opening

of the obstructed nasal duct. See *hydrops lacrumalis*.

III. *Epiphora*, from a nasal polypus compressing the internal orifice of the *ductus nasalis*.

It is *cured* by the extraction of the polypus*.

IV. *Epiphora*, from the lacrymal sac being compressed by ankylosis, or a toph in the *fossa lacrumalis*.

It is *cured* by removing the tumor. See *Anchylops*.

V. *Epiphora*, from a *rhyas*, or defect of the *caruncula lacrumalis*, is incurable.

VI. *Epiphora*, from diseased eyelids, which removes the *puncta lacrumalia* from the *lacus lacrumalis*, as the *encanthis*, *ectropium*, *entropium*, *lagophthalmus*, an intumescency of the palpebral margin.

The *cure* is performed by the ablation of the causes.

VII. *Epiphora*, from a paralysis of the *puncta lacrumalia*; for these *puncta* seem to suck the tears from the *lacus lacrumalis* by a muscular force.

The *cure* should be attempted by corroborants and antiparalytics. See *Blepharoptosis paralytica*.

* Janin saw the root of a *polypus nasalis* arising from the lacrymal sac.

Lotions which cause an increased action on the vessels may be useful, as chalybeate waters, &c.

VIII. *Epiphora*, from an erosion of the *puncta lacrumalia*.

Effects. — If the fibres of these orifices are eroded, they lose their powers of suction.

The *cure* requires the healing of the erosion by antiphlogistic lotions and the mildest astringents.

LIPPITUDO

Is an exudation of a puriform humour from the margin of the eyelids.

The *proximate cause* is a deposition of acrimony to the glandulæ Meibomianæ in the margin of the eyelids.

Effects. — This humour in the night agglutinates the *tarfi* of the eyelids together. The margins of the eyelids are red and tumify, are irritated and excite pain. An *ophthalmia, fistula lacrumalis*, and sometimes an *ectropium*, are the consequences.

The species of the *lippitudo* are,

I. *Lippitudo infantum*, which is familiar to children, particularly of an acrimonious habit.

The *cure* is performed by correctors and mineral alteratives given to the mother, if the

child sucks; if not, to the infant, as *æthiops mineralis*, *cinnabar antimonii*, and at intervals proper purges and antiphlogistics.

If the *lippitudo* of infants be accompanied with tinea, or any scabby eruptions, rubbing a light mercurial unguent on the vertex every other night will prove a cure, in conjunction of the other remedies.

II. *Lippitudo adultorum & senilis*. This arises from various acrimonies, and is likewise common to hard drinkers.

The *cure* consists in removing the acrimony; and to the eyes may be applied the mercurial lotions, which assist in removing the causes.

Some authors recommend caustical applications, setons, and issues; but their effects are uncertain, and frequently fruitless. The unguentum, or balsamum ophthalmicum, is useful.

III. *Lippitudo venerea*, which is observed from a suppressed gonorrhœa or fluor albus, and likewise is observed in children born of parents with venereal complaints.

The *cure* is effected by the use of the balsamum ophthalmicum, or, what is better, the *lotio penetrans ophthalmica*, and the internal use of the mercurius gummosus, given to the mother if she suckles, or to the infant, if not. Or mercurial frictions may be carefully administered

administered either to mother or child to eradicate the causes.

iv. *Lippitudo serophulosa*, which accompanies other serophulous symptoms.

It is *cured* by mineral alteratives.

v. *Lippitudo scorbutica*, which affects the scorbutic, and is *cured* by the means used for the sea, or land scurvy. Vegetable diet, and pure air, fresh meats, and exercise, for the former: but mineral alteratives, antiphlogistics, and a dry strict regimen, is a cure for the latter.

HYDROPS LACRUMALIS

Is an intumescency of the lacrymal sac, which being pressed by the finger, pure tears, or tears mixed with portions of white mucus, are expressed from the *puncta lacrumalia*, or through the *ductus nasalis*, and sometimes it flows through both.

The *proximate cause* is a *laxity* of the lacrymal sac, or an *obstruction* of the *ductus nasalis*.

The species are,

1. *Hydrops lacrumalis*, from a *laxity* of the *saccus lacrumalis*.

This is known by compressing the sac, from which proceeds the accumulated tears through

the *ductus nasalis* if pervious, or externally in the internal canthus of the eye.

The *cure* requires astringent injections, or collyria of the vitriolic or spirituous kind, and graduated compresses to the part, which should press on the sac, cold bathing and bracers.

II. *Hydrops lacrumalis*, from an obstruction of the *ductus nasalis*.

This obstruction is multiplex, and requires various modes of curing.

1. *Obstructio mucosa* requires a detergent collyrium, which should be dropped into the internal canthus of the eye many times in the day; or by Anell's syphon it should be injected into the *punctum lacrumale inferius*.

Infusum veronicæ, Seltzer water, *solutio salis ammoniaci*, vel boracis, are proper for these purposes.

2. *Obstructio*, from a contraction of the sphincter ductus nasalis, which is known when the tears, by a little force, can be pressed into the nose.

The *cure* is sometimes produced by emollient injections, but oftener by warm steams or vapors of aromatic herbs directed to the internal canthus of the eye, and up the nostril by means of a tube. To the liquor may be added a little *spiritus salis fumans*.

3. Ob-

3. *Obstructio*, from a corrugation of the *ductus nasalis*.

This cannot be known without an incision on the lacrymal sac, which should not be performed hastily, nor on slight grounds.

Emollient injections, vapors of vinegar, aromatic herbs, fumigations of cinnabar or æthiops to the internal canthus and up the nostrils should be repeatedly received; the lotio mercurialis should be applied with friction to the part.

Penetrating internals should likewise be administered.

If the obstruction, after a long continuance or these methods, should not be removed, then an incision is necessary.

Operation.—An incision must be made through the lacrymal sac, and catgut prepared, or very small medicated bougies, or a small leaden probe is to be passed into the *ductus nasalis* for many weeks, until the obstruction is thoroughly ablated.

The *ductus nasalis* being perfectly open, the external wound is to be consolidated by aqua vegeto mineralis, or mild astringents.

4. *Obstructio* from a nasal polypus is cured by extracting the polypus according to the rules of art.

ANCHYLOPS

Is a tumor in the internal canthus, which is seated *extra saccum*.

The species of the *anchylops* are,

I. *Anchylops inflammatoria*; which is known by a redness and heat of the internal canthus.

The *cure* requires antiphlogistics and cathartics internally, and the aqua vegeto mineralis externally.

II. *Anchylops suppuratoria*, which forms an abscess in the internal canthus.

This originates from a preceding inflammation, or a purulent metastasis.

The suppuration of the abscess is promoted by emollients.

When matured, it must be carefully opened with a lancet.

III. *Anchylops scirrhusa* is a hard tubercle in the internal canthus, which sometimes degenerates into the cancer.

It is *cured* by the application, *gradatim*, of the *spiritus nitri fumans* on the point of a writing pen.

IV. *Anchylops cistica* is an atheroma in the internal canthus, or an indolent tumor, of the colour of the skin, smooth and moveable.

The

The *cure* should be attempted by resolvents. If these, which is generally the case, do not succeed, it should be removed as the preceding.

v. *Anchylops serosa* is a tumor containing serum in the internal canthus.

If this is not resolvable, it must be removed by incision.

vi. *Anchylops tophosa*, seu *exostotica*, is a tophus in the internal canthus; the cause of which is commonly venereal.

Its *seat* is, for the most part, in the periostrum, which I have found by dissection.

The *cure* requires mercurials, decoctions of sarsaparilla, and mezereon.

Externally; balsamum ophthalmicum, unguentum mercuriale, or the mercurial lotions, may be applied.

vii. *Anchylops lacrumalis* is an intumescency of the *saccus lacrumalis* from the retention and accumulation of the tears. See Hydrops lacrumalis.

viii. *Anchylops*, from a *fistula lacrumalis*, is an intumescency of the *saccus lacrumalis* from the congestion of a puriform mucus. See *Fistula lacrumalis*.

ÆGYLOPS

Is an ulcer in the internal canthus of the eye, which is situated *extra saccum lacrumalem*.

Causes of the *ægylops* are contusions of the internal canthus, wounds, inflammation, deposition of acrimony, particularly the *small pox*, *fistula lacrumalis*.

The species of the *ægylops* are,

I. *Ægylops simplex* is a simple ulcer in the internal canthus not affecting the lacrymal sac.

It is *cured* by deficcative lotions.

II. *Ægylops cancrosa*, from a bad habit of body and a schirrus anchylops.

The *cure* should imitate the treatment of the cancer. Fumigations of cinnabar, deterging lotions, and internal alteratives, should be recommended.

I have known all methods fail of success, in some instances, while others have been radically cured.

The schirrosity or callosity must, however, be destroyed by *spiritus nitri fumans* before the ulcer will be disposed to heal.

III. *Ægylops venerea* is a venereal ulcer in the internal canthus of the eye.

It is *cured* by fumigations, and the balsamum
ophthal-

ophthalmicum lotio mercurialis externally ; at the same time antivenereal remedies must be recommended internally.

IV. *Ægylops cariosa* is a carious ulcer in the internal canthus of the eye, with or without a *fistula lacrumalis*.

It is very difficult of cure ; but it should be attempted by the remedies most appropriated to the cause.

For these purposes, antiseptics, antivenereal, or antiphlogistics may be necessary.

The caries should be suffered, in general, to separate or exfoliate of itself ; for corroding applications have done great mischief.

V. *Ægylops*, from a *fistula lacrumalis*, is an ulcer in the internal canthus of the eye, arising from a rupture or incision of the lacrymal sac. See *Fistula lacrumalis*.

FISTULA LACRUMALIS

Is an efflux of puriform matter from the *puncta lacrumalia*.

It is known by a small tumor of the internal canthus, or tumidity of that part, which on being pressed, a puriform mucus passes either through the *puncta lacrumalia*, or through the *ductus nasalis* into the nose, or from both these parts it issues out.

The

The *proximate cause* is an excretion of puriform mucus from the glands of the lacrymal sac, without an ulcer in the sac. An ulcer of the sac is very rare; and if there should be one, it is the effect, not the cause of this puriform efflux*.

The *remote causes* are a deposition of some acrimony in the glands of the lacrymal sac, as the variolous, morbillous, scrophulous, and venereal; an inflammation of the sac often returning, stagnation of the tears in the sac from an obstructed nasal duct; a contusion of the lacrumal sac.

The *fistula lacrumalis* is divided into simple and complicated.

The species of the *fistula lacrumalis* are,

I. *Fistula lacrumalis simplex*, in which there is no obstruction of the nasal duct.

This is known by the puriform mucus being pressed out, as well from the *puncta lacrumalia*, as through the *ductus nasalis*.

The cure requires *collyria detergentia* often instilled into the internal canthus; as *infusum veronicæ*, *solutio boracis*, &c.

Caustic solutions have been recommended, and

* An efflux of puriform mucus is often observed without any ulcer. In the *gonorrhœa*, *fluor albus*, in *coryza* from the nostrils a puriform mucus flows without ulcer; in the hæmorrhoidal

and vitriolic; the former are too severe and hazardous, and the latter is only proper after detergents have been used, or in relaxed cases.

The instillation should be performed in the following manner :

The patient should be placed supine before the light.

A quill should be cut transversely; the superior part of which should be covered with the finger, and the inferior aperture should be immersed into the collyrium, by which some drops enter the cavity of the quill.

The inferior aperture of the quill is to be applied to the canthus of the eye.

The finger on the superior part of the quill being removed, and the air rushing in, the liquid flows into the eye.

The eyelids being then closed, friction should be applied by a finger; and the liquor is by this means absorbed into the orifice of the *puncta lacrumalia*.

The liquid used can likewise be injected through the *puncta lacrumalia* by M. Anel's syphon *, in the annexed manner.

rhoidal flux mucus often appears; in the stone, with the urine; in the *phthisis spuria*, from the lungs; and yet, on dissection *post mortem*, no ulcer has been found.

* D. Anel nouvelle methode de guérir les fistules lacrimales,

1. A finger of the left hand draws the inferior eyelid outwardly towards the external canthus.

2. The point of the syphon is emitted in a line scarce obliquely, or almost perpendicularly, into the lacrymal orifice; then without force the canula of the syphon is to be passed into the lacrymal sac.

3. The liquid is then to be pressed out of the syphon into the sac.

4. The quantity of liquid should be small, lest it too much extend the *faccus lacrumalis*.

5. The liquor, after remaining some hours, is to be pressed out, and the same operation is again to be repeated.

This liquor, which I have successfully used, is the *lotio ophthalmica penetrans*; it both deterges, penetrates, and heals the part.

This species of the *fistula lacrumalis* I have frequently cured by the above-mentioned lotion and gentle friction; at the same time I have always prescribed, internally, remedies adapted to the various prevailing acrimonies, according to the constitution of the patients.

For these purposes, antiphlogistics to the plethoric; tonics to the relaxed; and mercurials, or metallic alteratives, should be prescribed to those whose fluids are vitiated by acrimony.

The

The injection by *Anel's* method is not superior to the instillation. The former by irritation produces inflammation and sometimes pain; the latter, being milder, in most cases should be preferred.

II. *Fistula lacrumulis*, complicated with an inflammation of the lacrymal sac.

It is known by an efflux of puriform mucus, redness, heat, and pain in the internal canthus.

This inflammation afflicts the patient, in some cases, three or four times in the year.

The *cure*, in general, is easily effected in a few days, by bleeding, saline cathartics, antiphlogistics; but, above all, by a cooling and very *dry* diet.

It sometimes happens that this inflammation continues for a month and longer, resisting obstinately all antiphlogistic remedies, and affecting the lacrymal passages.

In such cases the causes are commonly a relaxation of the vessels, which is discoverable by the patient's countenance, or by reflecting on the force of the medicines already prescribed; or an acrimony may fix on the part and prolong the disease.

The former should be treated with tonics, as the bark, chalybeates, and vitriolic preparations.

Light astringent lotions, the *aqua vegeto mineralis*, and the *lotio ophthalmica zincata*.

The acrimony cannot be removed without removing its primary cause ; this being investigated by the discernment and skill of the physician, the appropriated remedies are to be prescribed ; and these are always specifics, alteratives, or correctors of acrimony.

Revellentia are recommended by authors, as issues, setons, blisters to the neck, and *hirudines ad tempora*.

Much dependance should not be placed on either of those applications ; but if considered useful, they may be applied in conjunction with the foregoing more important plans, for they cannot do mischief, though they are disagreeable.

III. *Fistula lacrumalis*, complicated with an obstruction of the *ductus nasalis*.

This is known when the puriform mucus cannot be expressed from the sac into the nose.

The cure requires the ablation of the obstruction.

If the mucus be glutinous, it must be resolved and removed by detergent lotions and injections ; such as the *lotio boracis*, the *lotio mercurialis penetrans**, *infusum veronicæ*, &c.

* This lotion should be used with considerable friction, and should be repeated three or four times a day, for months, by which the obstruction in the duct is often removed without operation.

If the mucus be coagulated in the nasal duct, forming a solid obstruction, and the foregoing methods fail, conjointly with the use of mercurials, antimonial, fumigations of cinnabar, &c. the subsequent operation of the *fistula lacrumalis* will be necessary.

The cure of a *fistula lacrumalis*, complicated with an obstruction of the nasal duct, requires,

1. An incision into the lacrymal sac.
2. The perforation and dilatation of the *ductus nasalis*.
3. The exsiccation of the *ductus nasalis* after suppuration.
4. The sanation of the remaining external ulcer from the incision.

The most *proper time* for the operation is, when the lacrymal sac is much swelled with pus, and cannot be pressed out.

The operation, therefore, is performed,

1. Lest the *saccus* break in another place.
2. Lest the pus should exulcerate the whole sac and destroy it, and a caries of the *fossa lacrumalis* should be induced.

The Instruments.

A knife for the incision of the sac. The *cultus cataractarius* may be used.

A *speculum oculi*.

A *trocar* for the nasal duct.

A perforator for perforating the *os lacrumale*.

Chordæ fidium præparatæ, or fiddle strings, prepared of various sizes.

Bougies and leaden wire.

Small pledgits and doffils of lint.

A femilunar adhesive plaister.

Situs for the Operation.

1. The patient should be seated in a chair opposite the light.

2. An assistant standing behind the chair should hold the head of the patient steady.

3. The operator places himself before the patient.

The Operation.

1. The surgeon makes a longitudinal or perpendicular wound with a crooked bistory into the cavity of the most prominent part of the lacrymal sac.

2. The wound is then to be moderately and lightly filled with dry lint, and covered with a femilunar emplaster.

3. The first dressing to remain three days.

4. On the fourth day the wound is to be opened, and the *trocar*, or a probe is to be gently introduced through the obstructed nasal duct into the cavity of the nose.

From

From the patient's sensation of the probe, and by the efflux of a few drops of blood from the cavity of the nose, it is known that the obstruction is conquered.

5. The probe being withdrawn, the bougie, or catgut, is immediately pushed through the opened nasal canal; on this first day of the smallest size, on the second day larger, and on the third, the largest size.

These *chordæ* swell in the canal, and dilate it.

The dilatation of the canal is continued for three or four weeks by using the larger-sized catgut, and changing it daily.

The extremities of the *chordæ* are to be bent down, and covered with a plaster, to prevent the string from falling out of the duct.

6. Then, instead of the catgut, small bougies, prepared with extractum saturni, are to be immitted for fifteen days through the nasal duct.

7. After which, instead of the small bougies, a leaden wire probe is to be passed through the ductus nasalis; previously using some drops of the extractum saturni, or a strong aqua vegeto mineralis to the part. Thus the dilated canal will be gradually exciccated.

8. At last, these leaden wires are to be omitted, and the external incised part is to be covered with a plaster; by which means the wound *sua sponte* heals in a few days.

Symptoms incidental to the Operation.

I. *Hæmorrhagia*, from the incision of the lacrymal sac. This arises from a division of the arteria angularis, or some of its ramifications, and is easily stopped by dry lint, or prepared agaric.

II. *Epiphora*, or watery eye, which remains sometimes after the operation.

It arises either from a laxity of the sacculus lacrumalis, or from the lacrymal canals being swelled. The surgeon, therefore, should explore the lacrymal sac, either by a probe or injection, to discover whether they are open; for if they be concreted, or obstructed, they should be opened by a probe. If even after the sanation of the wound of the lacrymal sac, these ducts should be found concreted, a new incision of the sac, and a perforation of the lacrymal duct, ought to be performed.

Epiphora, from a laxity of the sacculus lacrumalis, is to be cured as an *hydrops sacci lacrumalis*, namely, by astringent lotions, cold bathing, &c.

III. *Callositas vulneris*, which arises under dilatation, either from the lint dressing, or leaden probe.

This requires the application of *butyrum antimonii*, *spiritus nitri fumans*, or any approved escha-

escharotic, or the knife, to destroy or remove the callosity; this being done, the parts heal as in a recent wound.

IV. *Fistula lacrumalis*, complicated with a rupture of the lacrymal sac.

If the puriform mucus by its glutinosity obstructs the *puncta lacrumalia*, together with the nasal duct, whilst the glands in the cavity of the sac continue to secrete mucus, then the *saccus lacrumalis*, with the superjacent cutis, bursts, and is ruptured outwardly.

This rupture happens in the middle of the *saccus lacrumalis*, or in another part, as under the inferior palpebra; the former is called the *legitimate*, the other, *illegitimate*.

A rupture arising in the *legitimate place*, or in the middle of the lacrymal sac, which for the most part is too small an orifice, and therefore requires dilatation, a *chorda* may be applied to the nasal duct.

A rupture in the *illegitimate place* requires that an operation should be instituted in the *saccus lacrumalis*; otherwise neither the illegitimate rupture, nor the *fistula lacrumalis*, can be cured.

V. *Fistula lacrumalis*, complicated with a caries of the *fossa lacrumalis*.

This species is rarely observed, and it arises

from an incision of the lacrymal sac being neglected.

Caries of the *os lacrumale* produces fetor and a fistula, and sometimes fungous excrescences in the lacrymal sac, or nasal canal.

1. The *cure* of the *caries* requires, internally, anticarious remedies, as cortex peruvianus, with assafoetida, &c.

2. Externally. The fungous parts must be gently removed either by escharotics or a knife; then tincture of euphorbium, mastich, or myrrh, is to be applied to the *caries*.

3. If the *ductus nasalis* should be so obliterated, that the triangular probe or *chordæ* cannot render it pervious, then a *new aperture* should be made by a larger triangular needle through the *os lacrumale* and internal membrane of the nostril into the cavity of the nose. Blood flowing from the nose, and air rushing out from the wound of the fistula, by compressing the nostrils, are signs of the perforation of the *os lacrumale*.

4. This aperture is to be immediately filled with a tent made of lint, and then left for three days, or with a sponge tent.

5. The tent then being taken out, three *chordæ fidium preparatæ* are to be immitted into
the

the *new-made aperture* for three or four weeks, that it may remain dilated.

6. Then, instead of the *chordæ*, lead bougies, or lead wire, which have the thickness of three *chordæ*, are to be passed through, and kept placed in the aperture for twenty-five or thirty days.

The aperture should be excoriated by cold water, with some slight astringent, and thus be rendered callous.

7. The *cereoli* and *styli* being afterwards omitted, the external wound of the sac is to be cicatrised.

VI. *Fistula lacrumalis*, complicated with acrimony, which may be scrophulous, venereal, variolous, cancerous, or from any other vice or taint of the blood.

In such instances, besides the general indications, the *medicamenta specifica* for those complaints should be prescribed.

ENCANTHIS

Is an excrescence or tumor of the *caruncula lacrumalis*.

Effects of the *encanthis* are deformity, a shedding of tears, and sometimes an ectropium.

The species of this disease are,

1. *Encanthis benigna*, or an unpainful excrescence,

cence, which is soft, red, and granulous, imitating the mulberry.

It is *cured*, 1. by *exsiccation*.

This is performed by the *aqua vegeto mineralis*, or other deficcatives, and gentle astringents.

2. By *ligature* of the root.

3. By the *excision* of the superfluous portion.

4. By *escharotics*, as the *spiritus nitri fumans*, &c.

II. *Encanthis inflammatoria*, or an inflammation of the *caruncula lacrumalis*.

It is known by its swelling, redness, heat, pain, and its sudden appearance.

It sometimes tumifies to a great magnitude, and either breaks of itself, or, by an incision, pus pours out, and the parts lacerated heal as in other abscesses.

The *cure* requires *resolution* by *aqua vegeto mineralis*, as a warm fomentation, or by the *aqua ophthalmica camphorata*.

If this will not succeed, emollient applications should be used, of a mucilaginous nature, to promote suppuration, and then the tumor is to be opened.

RHYAS

Is a decrease or defect of the *caruncula lacrymalis*.

The *proximate cause* is a native defect; or it may originate from excision, erosion, or acrimony.

This disorder is commonly *incurable*, and it induces an *epiphora insanabilis*, or a continual weeping.

PERIBROSIS

Is an ulceration or erosion at the corners or uniting parts of the eyelids.

This disorder most frequently affects the internal *commiffura* of the eyelids.

The species are,

I. *Peribrosis*, from the acrimony of the tears, as may be observed in the epiphora.

The *cure* requires the ablation of the epiphora; externally, by the *solutio lapis divini*, and internally, by correctors of the prevailing acrimony.

II. *Peribrosis*, from an *ægylops*, which sometimes extends to the commiffura of the eyelids.

It is *cured* by the ablation of the primary cause. See *Ægylops*.

LEMOSITAS

Is a puriform fordes inhering to the internal canthus of the eye *.

The *proximate cause* is a collection of the sebum from the sebaceous glands, which lying on the warm parts become like pus.

The species are,

I. *Lemositas vulgaris*, which arises from over watchfulness, and avoiding sleep; or from the dust flying in travelling through a dry road; or it sometimes happens to sick persons.

It is *cured* by repeatedly washing the eyes, and using the aqua vegeto mineralis.

II. *Lemositas constans*, which remains long, and derives its origin from a *lippitudo* of the *caruncula lacrumalis*.

It is *cured* as a lippitudo of the eyelids.

LACRUMATIO SANGUINEA

Is an exsudation of blood from the eyes.

The *proximate cause* is a dilatation of the arterial anastomosing extremities.

This complaint is seen amongst females, with whom the sanguineous evacuation every

* These fordes the Greeks call λεμια, or gramia, &c.

month flows not from the uterus, but from the eyes *.

The *cure* requires *venæsectio*, and directing of the *catamenia* to the uterus.

For these purposes *antiphlogistics*, *aloetics*, *mercurials*, or *tonics*, are useful in different constitutions, *pediluvia*, &c. †

DISEASES OF THE MEMBRANA CONJUNCTIVA.

OPHTHALMIA

Is an inflammation of the *membrana conjunctiva*, or of the whole bulb of the eye, which is distinguishable by redness, heat, pain, and tension of the parts.

The *proximate cause* is an inflammatory dilatation and oscillation of the ocular vessels, from an inflammatory stimulus, which immediately, or by consent, affects the eye.

The *predisposing causes* are, a laxity, debility, or too great sensibility.

The divisions of the ophthalmia are many, as likewise the denominations; which can only be determined by the *seat*, *degree*, *duration*, *complication*, and *causes* of the inflammation.

From the *seat*: the *ophthalmia* is divided into,

* Dodon. Observ. cap. xv.

† See my Treatise on Female Diseases.

1. *External*; which is in the *conjunctiva*, and sometimes in the *cornea* itself.

2. *Internal*; which is in the *iris*, *uvea*, or *membrana choroides*.

3. *Angular*; which only occupies the external or internal canthus.

From the *degree* of vehemence : it is divided into,

1. *Levis*, or flight, called *taraxis*.

2. *Gravissima*, or most violent, which is denominated *chemosis*.

The *ophthalmia* is distinguished by *duration* into,

1. *Acuta*, or acute, which is accompanied with a fever, and is of short duration.

2. *Chronica*; which is without fever, and remains many months, nay sometimes years.

3. *Periodica*; which returns every day or two, periodically.

From *complication* : the *ophthalmia* may be divided into,

1. *Complicata*, when it is joined with some other disease of the eye.

2. *Symptomatica*, when it is a symptom of some other disease, as phrenitis, fever, &c.

3. *Humida*; which has a vehement efflux of ferous or purulent humour.

4. *Sicca*;

4. *Sicca* ; which is dry, or without any efflux of humour.

From *causes* : the ophthalmia is divided into,

1. *Violenta* ; which arises from an external cause.

2. *Consensualis* ; the cause of which is in the abdomen, or in any other part.

3. *Idiopathica* ; the cause of which is in the eye itself.

4. *Acrimoniosa* ; which arises from a *metastasis*, or translation of some other disease ; as catarrh, venereal, gonorrhœa, cancer, scrophula, small pox, measles, eruptions, rheumatism, gout, or fevers.

From these various causes of the ophthalmia the subsequent species may be constituted.

Taraxis is the most slight inflammation of the eye, in which the redness is very trifling, and the pain moderate.

It arises from a light cause, as from acrid vapor, dentition in children, the heat of the sun, an extraneous body falling on the eye and insinuating itself under the eyelid, moist weather, a dry or cold wind.

The *cure* requires *abstinence from liquids*, or moist food, evacuations by gentle purges, light antiphlogistics ; and externally may be applied the aqua vegeto mineralis, or cold water.

If

If the inflammation should increase, leeches, or venæsection will be proper.

Formulae remediorum.

Mittatur sanguis ad $\mathfrak{z}\text{x}$. plus minusve secundum morbi violentiam, & ætatem. ægri.

No. 1. \mathcal{R} . Infus. sen. $\mathfrak{z}\text{ij}$.

Mann. opt. $\mathfrak{z}\text{ss}$.

Crem. tart. pulv. $\mathfrak{z}\text{j}$. M. f. haustus, bis vel ter in septimana sumendus.

If a stronger cathartic may be thought expedient :

No. 2. \mathcal{R} . Infus. sen. $\mathfrak{z}\text{ij}$.

Pulv. jalap. $\mathfrak{D}\text{j}$.

— crem. tart. $\mathfrak{z}\text{j}$.

— salis nitri. gr. xv. fyr.

Simp. q. s. f. haustus, alterno die sumendus.

For the robust and plethoric :

No. 3. \mathcal{R} . Sal. nitri. $\mathfrak{z}\text{ss}$.

Pulv. jalap. $\mathfrak{z}\text{ij}$.

— crem. tart. $\mathfrak{z}\text{j}$. M. dividendus in xvj. pulveres, quorum capiat unum bis vel ter de die ex coch. iv. aquæ puræ.

Decoctum nitrosum pro potu ordinario bibendum.

In cases where purging may be contraindicated :

No. 4. \mathcal{R} . Sal. nitri. $\mathfrak{z}\text{j}$.

Magnes. alb. $\mathfrak{z}\text{ij}$. M. f. pulvis, dividendus in vj. doses, quarum sumat unam ter vel quater de die ex coch. iij. aquæ.

Or,

Or,

No. 5. R. Pulv. crem. tart.
 ——— fal. nitr. aa ʒiss. M. dividendus in viij.
 doses, capiat unam tel vel quater in die, in coch.
 ij. aquæ.

The saline mixture, or spiritus Mindereri, may be substituted where nitrous remedies are not agreeable.

The cathartic salts and manna, or any other antiphlogistic laxative, may be prescribed, according to the circumstances and constitution of the patient.

Diet should be extremely *dry*; for as an increasing distension of the vessels is the cause of the symptoms, so is the diminution of their diameters a cure. Evacuations by bleeding or purging will avail little, unless the vessels are kept empty by a *most rigid* attention to abstinence from liquid diet. The less solid food is indulged in, so much the sooner will the cure of the ophthalmia be obtained.

External applications.

The external applications should be directed to lessen the increased action of the vessels, and to lubricate the eye in its necessary motions: the *aqua vegeto mineralis* for the former, and the *lotio ophthalmica mucilaginosæ* should be used for the latter purpose.

CHEMOSIS

Is the most vehement inflammation of the eye.

Symptoms.—The tunica conjunctiva is reddened like scarlet cloth, and is so swelled as to be elevated considerably all round the margin of the transparent cornea.

The cornea appears turbid and red, but not always so.

2. When the inflammation is excessive, I have seen the transparent cornea entirely covered by the thickened and distended *conjunctiva*, so that no light whatever could be transmitted to the eye.

The eyelids are often tumid and inflamed.

3. The sensations of pain are most atrocious, particularly near the *supercilia*.

4. Strong pulsations are felt in the head and eye, with great heat.

5. The eye becomes dim, or cannot bear the rays of light.

The *consequences* — If the *chemosis* cannot be resolved by powerful evacuants and extreme abstinence, the consequences are various.

1. The eye suppurates, bursts, discharges its humors, an incurable blindness remains during life;

life; this misfortune happens often from the injudicious application of *pultices*.

2. An opacity of the cornea, obscuring vision.

3. Staphyloma.

4. Varices of the conjunctiva.

5. Ulcers of the cornea.

6. Fistula lacrumalis.

7. Pterygium, &c.

There are three species of this dreadful disease.

I. *Chemosis vasculosa*; in which the vessels only are very much distended.

II. *Chemosis vesiculosa*; in which the arteries are not only much distended, but the cellular structure composing the conjunctiva is distended, and the cells themselves filled, in the form of thousands of minute miliary vesicles, with a red sanguineous fluid; and sometimes the whole membrane appears a cake of blood, as though all the cells were ruptured, and the blood had run in a confused manner into their cavities.

III. *Chemosis complicata*; in conjunction with all the former symptoms in a greater or less degree; the conjunctiva in the inner surface of the upper eyelid is very tumid, red, and in-

flamed, and sometimes the whole substance of the eyelid is violently affected.

Causes.—The proximate or immediate causes of the different species are,

1. In the *chemosis vasculosa* the vascular system is distended.

2. The red particles of the blood are evidently forced into innumerable minute vessels, which naturally conveyed a ferous fluid before the commencement of the disorder.

3. The pulsations of arteries are augmented, and heat is the consequence of an increased attrition.

4. The extreme nervous sensibility of the eye is the cause of the painful sensations.

In the *chemosis vesiculosa*, the arterial system, through an increased action and force, drives the blood into the cellular structure composing the conjunctiva.

The cells of this membrane are distended with fluid from the minute arteries, which increases at every fresh pulsation.

The venal system loses its inhaling and absorbing powers, so that the blood brought by the arteries, and the serum in particular, is not conveyed off by the veins.

The *lymphæ coagulabilis*, vel *gelatinosa*, destined to be conveyed to the blood by the lymphatics,

phatics, is deposited in the inflamed part, and the lymphatics lose their absorption.

The fluid continually accumulates in the cells of the conjunctiva membrana, until the cells are in such a state of distension, from being filled with the serous and red particles of blood, as to admit no more fluid; the blood passes then through the next anastomosing branches.

The turgency of the membrane impedes the necessary motions of the eye, and increases pain; particularly some time after food.

The capillary vessels, and minute blood-returning veins, are in a state, almost, of strangulation, from the magnitude of the tumor and compression.

In the *chemosis complicata* the eyelid suffers in the same manner, from similar causes, but with an augmentation of all the symptoms.

The arterial system, in this augmented state of the inflammation, loses, in a great measure, its contractile force; hence the matter or fluid in the cells stagnate, and are often converted into pus: a rupture of the tumor, and sometimes of the cornea itself, is the consequence.

The cornea bursting, the aqueous, chrystalline, and vitreous humors flow out from the globe, the eye sinks, and an incurable blindness ever remains.

Prognostic.—If the *chemosis*, or this violent inflammation of the eye, be treated in its early stage with skill and judgment, the disease is frequently cured by *resolution*: but if improper fomentations or pultices have been applied, and the most powerful evacuations, by bleedings, cathartics, and abstinence, have been neglected, a *suppuration* of the eye, and a total and incurable blindness may be the consequence.

The first species of the disorder is easier to cure than the second, and the second than the third.

The sooner the most powerful modes of cure are adopted, the greater may be the prospect of success. Trifling remedies cannot avail in a dangerous and violent disorder.

The Boerhaavian method of treating inflammation, by *diluting liquors*, which is at this time almost universally followed, must *increase* the disease, and is contradictory to all physiological reasoning.

Indications of cure.

The general and particular indications of cure are the removal of the immediate causes of the disease.

1. *Fulness* and *distension* of the vessels are the primary causes of the disease; therefore,
emptying

emptying them of their contained fluids is a principal object.

2. The vessels are emptied by *large bleedings* in the jugular veins, which should be boldly repeated, unless some contraindication forbids this operation.

3. Powerful evacuating *purges* diminish the quantity of the fluids : but what is called working them off, with plenty of water gruel or tea, is a striking absurdity ; for what does not pass off through the intestinal canal, is received into the habit. Can any intention be more contradictory to plain reason and common sense, than for medicine to prescribe *emptying* and *filling* at one and the same moment.

Purges, therefore, are to be prescribed as evacuants ; but plentiful drinks forbid.

4. *Leeches* should be applied to the external and internal canthus, and, likewise, to the temples, or supercilia ; six or eight at one time.

5. *Cupping*, with *scarification* on the superior part of the neck, behind the ears, or on the hairy scalp or shoulders, should be ordered, and as much blood as possible extracted, even until the patient faints.

6. If it should be thought necessary, *arteriemia* should be performed on the temporal artery ; and thus the *arteria angularis* may be

completely emptied, with its principal ramifications.

7. The *increased pulsations* are to be diminished by *antiphlogistic sedatives*, with cooling *antispasmodics*.

For these purposes, *sal prunella*, *nitrum*, *camphora*, neutral, and alkaline salts, may be conjointly prescribed.

8. The *congested humors* in the cells of the conjunctiva are to be evacuated, to remove causes of strangulation in the capillary tubes, compression of the arterial, and obstruction in the venal systems.

9. *Fomentations*, in which camphor is dissolved, should be repeatedly applied warm; and the parts affected well covered, to prevent the admission of external air or light.

A weak *aqua vegeto mineralis* may be used warm as a fomentation.

Scarification of the thickened membrane is sometimes very useful, and must be repeated according to the urgency of the symptoms.

10. *Diaphoretics*, not increasing heat, are very useful in diminishing the quantity, and in resolving the impacted fluids contained in the cells of the conjunctiva. *Tartarum emeticum*, to the eighth or fourth part of a grain, or three grains of *James's powder*, should be given every
four

four or six hours, but without *warm drinks*, and in such doses to each individual, as not to excite *nausea* or *vomiting*.

Camphora, *nitrum*, and *spiritus Mindereri*, may be useful for the same purposes.

11. *Warm vapors* of vinegar and water are useful as resolvents and relaxers of the distension.

12. *Pediluvia*, of warm water and salt, with a small portion of the *spiritus salis marini fumans*, are excellent remedies to promote a diaphoresis without nauseating the stomach, or increasing the quantity of fluids in the body.

13. *Abstinence*. The most rigid abstinence should be instituted from the commencement to the termination of the disease.

A small piece of bread and a roasted apple, or currant jelly, or sweet orange, or any fruits not flatulent, should be the whole of the food, and these should be taken very sparingly.

All meats, and liquors of every sort, should be abstained from, except solutions of nitre, &c.

14. The motion of the muscles of the inferior maxilla by friction may increase the inflammation, irritate, cause pain, and retard the cure; therefore rest and great taciturnity should be earnestly recommended.

15. *Cataplasms*, or pultices, should be always excluded,

excluded, as by their weight they are apt to irritate and promote, what at all events should be most carefully avoided, namely, *suppuration*.

16. *Blisters* may be applied very large to the neck, behind the ears, or between the shoulders.

These general indications will be more or less necessary, according to the degrees of violence and species of the *chemosis*.

FORMULÆ.

Sanguis mittendus ad ℥viij. vel xiv. vel xx. e vena jugulari, ad animi deliquium.

No. 6. R̄. Calomel ppt. gr. iij. ad vj.

Conf. Cynosbat q. s. f. pilula, statim post sanguinis missionem sumenda, & horis duabus postea haustus sequens sumendus.

No. 7. R̄. Infus. fen. ℥ij.

Pulv. crem. tart. ℥ij.

— Jalap. ℥j. vel ʒfs. fyr. simp. q. s. f. haustus.

Vel, No. 8. R̄. Sacchar alb.

Pulv. sal. nitr.

— Jalap. aa ʒfs. f. pulvis ex coch. iij. aquæ puræ vel menthæ simplicis sumendus.

Vel. No. 9. R̄. Infus. fen. ℥ij.

Tart. solub. ℥ij.

Tinct. Jalap. ʒfs. fyr. simp. q. s. f. haustus.

Manna and any of the purgative salts may
be

be administered as antiphlogistics and evacuants, and the prescriptions, No. 4 and 5. But if the *chemosis* should happen to the *gouty*, *rheumatic*, or *debilitated*, then drastic, or even saline purgatives, will be highly improper and hazardous.

No. 10. R. Aq. menth. pip. simp. ℥iss.

Tinct. sacrae ℥iss. f. haustus, alterno mane sumendus.

Vel, No. 11. R. Calomel ppt. gr. vj.

Pil. aromat. ℥ij. M. accurate, f. pilula

No. vi. quarum sumat unam alternis noctibus.

In such patients, aloetics and sapo Ven., the bitter purging pills, merely as eccoprotics, are to be preferred; for gouty or weak persons cannot bear strong purges. The treatment, therefore, of the *chemosis*, and, indeed, all other diseases, should be regulated and accommodated more to the individual constitution, age, sex, and other peculiarities, of the patient, than merely to the symptoms of the disease.

In the *chemosis*, in which there is always great danger of losing vision, something important should be attempted immediately. The disorder is urgent. Slow meditation loses the opportunity of relief. Quick determination, and rapid action, are necessary, or all medical assistance will be fruitless.

Appli-

Applicentur hirudines No. 2, 4, 6, vel 8, cantho interno, externo, temporibusque.

If cupping should be more eligible ;

Applicentur cucurbitulæ cum scarificatione post aures, nuchæ, scapulifve, & extrahe sanguinis ℥viij. vel ℥xij.

If the disease is violent, and resists bleeding, cupping, leeches, or purging ; then arteriotomia may be recommended.

Arteria temporalis secanda, & sanguis quantum satis mittenda.

Antiphlogistics, &c.

No. 12. R̄. Sal. nitr. ℥j. ʒss. vel ℥ij. solve in
Aq. pur. ʒiss.

Julep. e camphor. ʒss. f. haustus tertiâ vel quartâ quaque hora sumendus.

Decoctum nitrosum pro potu ordinario præscribendum ; but not to the gouty, nervous, or debilitated.

No. 13. R̄. Sal. fodæ.

— nitr. aa gr. xv. solve in

Aq. pur. ʒiss.

Julep. e camph. ʒss. M. f. haustus, quater in die sumendus.

No. 14. R̄. Sal. prunell. ℥ij. vel ʒj. solve in

Aq. pur. ʒiss.

Julep. e camph. ʒss. f. haustus ut supra sumendus.

powerful internal remedies are removing the *chemosis*; blood and serum issues from the incisions; for a time the membrane appears in a more relaxed state, and all the painful symptoms are mitigated.

The operation itself, however, should be performed gently and cautiously, not by making punctures, but little longitudinal incisions.

The sudorifics and diaphoretics likely to diminish the quantity of fluids, to resolve the impacted matter, and to push through the capillary vessels into the veins, are the following; the patient, at the same time, is to be retained in bed, and the room should always be kept dark.

No. 18. *R.* Pulv. Jacobi gr. ij. iij. iv. vel v. Cons. Cynosbat. q. s. f. pilula, quartâ vel sextâ horâ fumenda superbibendo haustum sequentem.

No. 19. *R.* Camphor. gr. v. vel x.

Amygdal. dulc. decoct. No. iv.

Sacch. alb. \mathfrak{z} ij. tere simul deinde adde gradatim.

Aq. pur. \mathfrak{z} iss.

Sal. nitr. gr. xv. ad \mathfrak{z} ij. f. haustus.

No. 20. *R.* Tart. emet. gr. j. solve in aq. pur. \mathfrak{z} j.

Hujus solutionis \mathfrak{z} j. vel \mathfrak{z} ij.

Julep. e camph. \mathfrak{z} vj.

Aq. pur. \mathfrak{z} j.

Sal. nitr. \mathfrak{z} j. M. f. haustus quartâ vel sextâ, quâque horâ fumendus.

No. 21. R_x. Spirit. Minder. ℥ss.

Aq. pur. ℥iss. fyr. croci q. s. f. haustus quartâ
vel sexta quaq. hora fumendus.

No. 22. R_x. Sal. c. c. gr. x.

— nitr. ℥j. vel 3ss.

Julep. e camph. 3vj.

Aq. pur. 3j. f. haustus ut supra fumendus.

No. 23. R_x. Effent. antimon. Huxham, gtt. xxx.

Julep. e camph.

Aq. pur. 3j. f. haustus.

To the gouty, or debilitated, nitre should be, in general, omitted, and a dram or two of the *tinctura serpentariæ virginianæ* added to the camphorated, or other draughts, to be taken only at the hour of rest.

Vapors, or warm steams.

No. 24. R_x. Camphor. 3ij.

Mucilag. gum. arab. 3ss. tere simul, deinde adde adde aq. pur. ℥bj. Vapores hujus liquoris tepesacti ope infundibili interno oculi cantho applicandi, bis vel ter in die.

Vel,

No. 25. R_x. Acet. distillat. vel commun.

Aq. pur. āā 3viiij. f. vapor secundum artem.

Vel,

No. 26. R_x. Flor. lavend. 3j.

— sambuci 3ij. coque in aq. pur. ℥bij. f. vapor, ut supra utendus.

Vel,

No. 27. R_x. Spt. falis fumant. ~~3j~~ 3j

Aq. pur. tepid. ℥bij. f. vapor.

No.

Pediluvia.

No. 28. R. Aq. pur. tepid. cong. iij.

Sal. comm. ℥ss. f. pediluvium, omni nocte
ante tempus decubitus utendum.

Vel,

No. 29. R. Aq. pur. tepid. cong. iiij.

Spt. sal. fumant. ℥ij. f. pediluvium.

Vel,

No. 30. R. Flor. lavend. ℥ss.

— sambuci ℥j. coque in aqua pur. ℥j.
deinde adde

Aq. pur. cong. iiij. f. pediluvium tepidum.

External Applications.

In vehement inflammations of the eye, roasted apple, conserve of roses, flower of linseed, white bread and milk, alum and egg; &c. in form of pultices, are generally applied; but they can answer no rational intention of cure: on the contrary, I can speak from an experience which few ever enjoyed, that scarce *one instance of blindness* amongst hundreds has happened, in which I could not trace the misfortune to be principally owing to *pultices*, or some ignorant *outward application* while the eyes were inflamed. The phrase of “*the eyes are not to be tampered with,*” is almost proverbial; yet ignorance dares, no doubt with the best and most humane intentions, to prescribe injurious remedies in the most difficult and dangerous diseases.

While

While the inflammation is violent light *mucilaginous applications* are most proper; as a weak solution of gum arabic in water, mucilages of quince seed, linseed, decoction of poppy heads, &c. not as effectual cause-removing remedies, but as mitigators of pain; while the more powerful modes of cure are administered.

When the violence of the inflammation has *thoroughly subsided*, then light *astringent lotions* may be applied to strengthen the relaxed vessels and membranes; and internally, in some cases, the bark may accompany such a practice.

Astringent lotions are chiefly composed of very weak solutions of vitriolic preparations; the vegeto mineral water is likewise excellent; for the qualities of lead are to deaden sensation and prove gently astringent at the same time.

These are the general modes of treating the most vehement and common inflammation of the eye; but as *great errors* have arisen from mistaking one species of inflammation from another, the following are enumerated, with their different modes of cure.

Ophthalmia interna is an inflammation of the iris, uvea, and choroides.

It is known by a slight redness of the *albueginea*, and contraction of the pupil, or shutting

H

of

of the eyelids to avoid light. Pain and pulsations are felt in the fundus of the eye and head, and the globe itself is sometimes pushed forward out of its natural seat.

The chemosis has changed into an internal ophthalmia, and this latter into a chemosis, and sometimes they attack conjointly; which produce the most acute and most dangerous of all the inflammations of the eye. This terminates, if not speedily relieved, in an *hypopyon*, or bursting of the eye, and an irremediable blindness follows *.

The *causes* are, whatever can force an influx of blood to the membranes of the eye, as violent vomiting, coughing, an obstruction, or compression of the returning venal or absorbent system, mercurial frictions incautiously advised, or injudiciously managed †; plethora,
or

* I was lately consulted by a lady whom Mr. Humpage, the surgeon, attended, who probably lost her eye in this manner, from having applied conserve of roses and alum to her eye by the advice of some ignorant person.

† I have seen these misfortunes happen from all the enumerated causes: one of the most dreadful I ever was consulted in, was the servant of a member of the House of Commons, *mercurial* ointment had been rubbed on his legs, at an hospital, which immediately inflamed one eye; but this not being attended to, the frictions were repeated; the globe of the eye became as large as a goose egg, and the unfortunate man had obtained no sleep for six weeks before I was consulted;

or some acrimony, as the gouty, venereal, or scrophulous, measles or small pox, &c.

The *cure* should be similar to the chemosis or other preceding inflammations of the eye; but as this complicated case is more dangerous than any other, more powerful evacuations and a rigider abstinence, unless contraindicated, as in the gout, &c. should be recommended.

iv. *Ophthalmia acuta* is the common inflammation of the eye, joined with an inflammatory fever, and which terminates in a certain number of days or weeks, according to rapidness or protraction of the febrile symptoms.

It is more violent than the *taraxis*; but, except the phlogistic diathesis, it is not accompanied with any particular acrimony.

The *cure* chiefly depends on the progress and termination of the fever, of which it is a symptom, and often occasioned by *violent vomits*.

Repeated bleedings, purges, antiphlogistics, and a weak aqua vegeto mineralis, as a mitigating external application, are the proper remedies.

sulted; he could not close his lids. The eye was lost, but I reduced the size of the tumor by repeated scarification, extreme abstinence, and evacuations, and thus he became easy and free from pain.

v. *Ophthalmia chronica*, or *habitual ophthalmia*, is an inflammation of the eye of long duration; the conjunctiva is red, but, in general, is unattended with pain.

The causes are, a neglect of the inflammation on its first appearance, or mismanagement at that period; a laxity of the vessels, and an admission of red particles, where the serous alone should flow.

It appears chiefly two or three hours after eating or drinking.

The *cure* might be acquired by a *dry* diet and *tonics*, or antiphlogistics internally and externally used, and long continued; but patients in general will not submit to such a course; when no great pain obliges them to comply to strict medical injunctions. An abridgement of diet is an abridgement of happiness, and no small evil to many; but the addition of medicine is considered intolerable; therefore the habitual ophthalmia is suffered to continue without much attention.

The *cure* may be effected according to the constitution of patients; to the robust and full, evacuation and antiphlogistics of nitre, &c.; to the weak or more debilitated, bracers of bark, steel, &c.; but by both a very *dry* diet should be observed.

I have cured these cases, even where the pa-
I tients

tients would not comply with strict regimen, by a long continuance of the electuarius lenitivum and æthiops mineral, &c., by which the freedoms in food were daily carried off through the intestinal canal, and the quantity and force of the fluids diminished.

Externally, cold bathing the eyes, vitriolic, saturnine, or aluminous lotions, are proper to assist the contraction of the minute distended vessels.

VI. *Ophthalmia sicca* is an habitual ophthalmia, in which neither tears nor serous discharge, nor any tumor in the eyelids, are observed. There is a slight redness and itching in the margin of the eyelids, and they adhere in the night.

The *cause* is an acrimony of the humors and diseased glands; from hence a disease difficult of cure, unless by long-continued courses of antiphlogistics, bracers, or mineral alteratives, according to the predominating cause.

Externally, the *lotio mercurialis penetrans* is very proper to assist in removing causes, and afterward light saturnine collyriums; or in many cases light mucilaginous lotions should be preferred.

The *collyrium obvolvens*, composed of amyllum diluted with aqua rosar. or mucilage of femin. cydoniorum, are often beneficial in sup-

H 3
plying

plying the eye with mucilaginous particles, in some respects similar to those secreted by the *glandulæ Meibomianæ*, called by the Greeks *sclerophthalmia*, and others *xerophthalmia*.

VII. *Ophthalmia humida* is an habitual inflammation of the eye with tumefaction about the tarsus of the eyelids, copious discharge of tears and excoriation of the lids, and even the cheeks.

The *cause* must be sought for in the habit, which is an acrimony, as the scrophula, &c.; hence difficult of cure.

The *cure* cannot be obtained but by investigating the prevailing acrimony, whether scrophulous or scorbutic, &c., and accommodating remedies to correct or remove the disorder.

In plethoric habits bleedings repeated, purgings, and antiphlogistics of nitrum, sal prunellæ, &c., with a very dry, abstemious diet, should be instituted.

To the relaxed and debilitated, tonics of bark, steel, or vitriolic preparations, are necessary.

In scorbutic or scrophulous cases mineral alteratives must be given either with or without antiphlogistics, or bracers, according as circumstances may require.

Externally, the *collyrium obvolvens*, or lotio
muci-

mucilaginous, are proper to palliate the sharpness of the symptoms.

Afterward saturnine or vitriolic lotions may be useful.

VIII. *Ophthalmia violenta*, which arises from accidental strokes, sand, gravel, insects flying into the eye, or wounds, as after the operation for the cataract, &c.

The cure must be accommodated to the more or less degree of inflammation.

Extraneous bodies must be removed.

Mucilaginous lotions externally applied.

Bleeding and purging, or the use of antiphlogistics, are frequently necessary; but above all a dry diet, until the inflammation has subsided.

IX. *Ophthalmia consensualis*, which is produced by saburra in the primæ viæ, and is discovered by putrid, acid, acrid, or bilious eructations, or from worms. The disease is most familiar with infants during dentition, and is sometimes accompanied with *febricula*.

The cure requires bleeding, purges, mixtures of nitre and magnesia, or other antiphlogistics, vermifuge remedies, &c. &c. according to the urgency of the symptoms.

This consensual ophthalmia arises likewise from pains in the head, teeth, mouth, gums,

obstructed viscera, &c.; therefore the primary causes require removal.

x. *Ophthalmia encephalica*, which is caused by an affection of the cerebrum, as the phrenitis, delirium, acute fevers, contusions of the head, fractures, &c.

This species is replete with danger.

The remedies against the phrenitis, &c., are blisters to the head, neck, arms, legs, &c., and sinapisms to the feet of acetum scilliticum and mustard.

Large bleedings from the jugular, according to the stage of the disease, are necessary. Vapors of vinegar; camphor, nitre, and antimonial diaphoretics, pediluvia, active purges, and in short whatever can diminish the quantity of fluids toward the brain, or remove inflammation, and prevent suppuration or gangrene, should be administered.

xi. *Ophthalmia plethorica*, originating in a congestion of blood in the eyes, and most common to plethoric habits.

The *causes* are plethora, suppressed menses, hæmorrhoids, the abuse of spirituous liquors, nausea and vomiting, coughs, constipation, or accumulations of blood toward the brain from deep study and meditation, vociferation, &c.

The *cure* is performed by venæsection, cathartics,

thartics, restoring the suppressed evacuations; or removing whatever are the primary causes.

Vomiting is suppressed by gentle stomachic laxatives of the bitter kind, as pilulæ Rufi, rhubarb and magnesia, infusions of senna, &c. These, by removing the inverted peristaltic motion of the stomach and intestines, convey and evacuate the offending causes through the intestinal canal.

Coughs are mitigated by venæsection, diaphoretics at night, and oleous mixtures with opiates, or elix. paregoricum, according to causes and circumstances of cases.

XII. *Ophthalmia catarrhalis*, which is caused by a cold, or suppression of the morning perspiration, and it continues some few days, in the manner of a catarrh. First, a thin acrimonious discharge appears, then it becomes thicker in consistence, and soon after the ophthalmia disappears.

The cure should be similar to the catarrh; acrimony first should be obtunded by mild mucilaginous lotions; internally, a light cathartic, and diaphoretics, are useful with an abstemious diet.

XIII. *Ophthalmia gonorrhœica*; this is caused, though a rare case, by a suppression of the venereal gonorrhœa. The virulent venereal matter is deposited in the cellular texture of the
mem-

membrana conjunctiva or albuginea by metastasis.

Rubbing the eyes accidentally with a finger, after pressing out some of the matter of the virulent gonorrhœa, has produced this species of ophthalmia.

Symptoms. Two or three days after the suppressed gonorrhœa arises a flux of puriform and acrimonious humor, similar to that of the gonorrhœa, or venereal clap, as it is vulgarly called, with a redness of the tunica albuginea. The redness of the eyes, however, does not remit, as in the venereal confirmed lues, about sun-rise; but the redness, inflammation, and excoriation rapidly increase, and form the most dangerous species of the chemosis, by which the transparent cornea is obscured, and the membrana conjunctiva is so distended, that the cornea appears deeply sunk below the surface of the conjunctiva.

This species of the venereal ophthalmia is very difficult to resolve; it commonly terminates in a suppuration of the internal humors of the eye, and causes a total opacity of the cornea, or by the bursting of the eye, an incurable blindness.

Cure. All the remedies recommended in the *chemosis* are in this deplorable case to be spiritedly used; delay is destruction. Bleedings, purgings,

purgings, diaphoretics, leeches applied to the internal and external canthus of the eye, scarifications of the conjunctive membrane, blisters, fomentations of a weak solution of mercurius corrosivus, gr. iv. ad ℥iij. aquæ, applied frequently warm by means of the eye-bath cup or wine glass, are all necessary to prevent the loss of vision.

Extreme abstinence from foods, *moist* or *dry*, should be strongly inculcated.

Internally, five grains of calomel may be given over night, and any of the active purges recommended in the *chemosis* the following morning, and repeated every other day.

The discharge of the gonorrhœa should be reproduced by bougies introduced and continued in the urethra *.

All these methods have failed; therefore the use of penetrating mercurials internally should be prescribed.

No. 31. R̄. Merc. corr. sub.

Tart. emetic. aa gr. j. solve in

Julep. c camph. ℥viiij. deinde adde

Sal. nitr. ℥ij. f. solutio.

No. 32. R̄. Hujus solutionis ℥ss.

Decoct. sarsaparil. ℥ijss. f. haustus ter in die sumendus.

* This has likewise been recommended by the celebrated Lange, who anointed with the *virulent matter* of the gonorrhœa, in *Commentatione de ophthalmia*.

Vel,

No. 33. R. Mercur. gummosi gr. x,

Decoct. sarsaparil. ʒij.

Tart. emet. ad quartam partem grani

Sal. nitr. ʒj. f. haustus ter in die sumendus.

Fumigations of cinnabar to the nostrils, and even to the eye, if bearable, are useful.

An eye-bath may be composed of half an ounce of the *mercurius gummosus* and a pint of tepid water, in which the eye should be frequently bathed; at least every hour.

These methods have succeeded in these truly horrid cases, as likewise in other inveterate venereal symptoms.

Mercurial unguents to the extremities may be serviceable; but salivation must not be raised; for a flux of humors toward the head, or salivary glands has, by impeding the returning veins, increased all the dreadful symptoms*.

The excision, or cutting out the conjunctive membrane, has been performed in this melancholy case, but without success; for on the contrary, it was attended with additional mischief and misery†.

* New-invented remedies for the recent and confirmed venereal disorders are given in the treatise on those subjects, much milder and more efficacious than ointments, violent purging, salivations, &c.

† Schmucker. *Chirurg. Wahrnehmungen*, 1 tom. 482.

During

During the administration of the remedies the patient should be kept in bed, the room should be warm, perspiration freely promoted, and the medicines long continued to secure the patient from a relapse.

xiv. *Ophthalmia venerea*, which arises from a venereal acrimony commonly diffused through the whole body, and is accompanied with nocturnal pains in the periosteum of the tibia, or venereal eruptions, &c.

This ophthalmia differs from the last; for towards morning the symptoms abate.

The cure is to be attempted by the antivenereal remedies just recommended, or others, according to the nature of the case*.

xv. *Ophthalmia cancrosa* is a light redness of the eyes and margins of the eyelids, accompanied with a cancerous scirrhus or ulcer of some other part.

This cannot be cured, but by the removal of the cancer, and cancerous indisposition from the habit, which is frequently impossible.

Internally, *mineral alteratives* invented and recommended by me in the treatise on cancer-

* A remarkable venereal ophthalmia happened to a woman who permitted an infected infant to suck her nipple: one eye was lost; but the other preserved by my discovering the case to be venereal.—See cases of the diseased eyes.

rous cafes, may be ordered, and long continued.

Pills of a grain or two grains, made of a powder composed of calomel well washed, and sulphur auratum antimonii, equal parts, or in other proportions; which should be rubbed together many hours, may be given *ter in die*.

Cinnabar or æthiops and nitre are likewise to be recommended; but if the cancer should have been neglected in its commencement, no cure can be rationally expected of parts whose vessels, tela cellulosa, and glandular structure, are become one confused indurated or ulcerated mass *.

xvi. *Ophthalmia scrophulosa*, which is common to children, and has lately, by carelessness in the management of inoculation for the small pox, increased to a prodigious degree†.

It is known by being accompanied with other scrophulous symptoms; as tumors of the lymphatic glands in the neck or arms, swelled upper lip, &c.

The *cure* must be accommodated to the constitution of the patients and circumstances of cases.

* See my treatise and observations on Cancers, and prescriptions in that melancholy disorder.

† In observations on inoculation I shall shew the necessity of an exact preparation, and the melancholy effects of its negligence.

If

If the glandular tumors be hard, *mineral alteratives* must be prescribed, and long persevered in, with solutions of nitre. Purgatives must be occasionally given.

No. 34. R̄. Sulph. aurat. ant. ℥j.

Calomel. ppt. gr. v. M. accurate, dein adde

Conserv. rosar. q. s. f. pilulæ No. xxx. quarum sumat j. ter in die, superbibendo coch. j. misturæ sequentis.

No. 35. R̄. Sal. nitr. ʒj.

Aq. pur. ʒviij.

Syr. croci q. s. f. mistura.

Vel,

No. 36. R̄. Pulvis Jacobi ℥j.

Calomel. ppt. gr. iv. M. accurate, deinde adde conserv. rosar. q. s. f. pilulæ No. xx. quarum sumat j. bis vel ter in die.

Vel,

No. 37. R̄. Kerm. min. gr. xij.

Calomel. ppt. gr. iij.

Conserv. rosar. q. s. f. pilulæ No. xxiv. capiat j. mane & nocte, & quarto quoque mane pulverem sequentem in coch. j. aquæ.

No. 38. R̄. Pulv. e fen. c. ʒj. dividend. in iv. doses.

A very dry diet, and abstinence from all acids, fruits, salted meats, &c., should be directed.

If the infant sucks, similar remedies may be given to the mother or nurse in larger doses, which is a preferable mode in curing children of scrophulous and other inveterate chronic affections.

Ointments

Ointments applied every night, or every other night, to the *vertex capitis*, composed of hydragryrus and some sulphureous composition, are very beneficial. The particles are most probably absorbed by the minute lymphatics, and immediately conveyed to or through the obstructed vessels and glands about the neck. This observation anatomy teaches, and practice confirms.

The minute branches of the lymphatics of the head, near the vertex, proceed almost in radiated directions towards the face; descend to the neck, &c. and circulate their fluids from minute ramifications to larger trunks. This clearly explains the rational theory and probable uses of unguents with mineral alteratives.

No. 39. \mathcal{R} . Cinnabar. fact. præparat. \mathfrak{z} ij.

Camphor. in oleo imbutæ \mathfrak{z} iss.

Ung. alb. \mathfrak{z} ij. f. unguentum, parum ejus vertici capitis applicetur, omni vel alterna quaque nocte.

Vel,

No. 40. \mathcal{R} . Merc. præcipitat. alb.

Lactis sulph. $\mathfrak{a}\mathfrak{a}$ \mathfrak{z} j.

Axungia porcin. \mathfrak{z} ij.

Ol. lavend. aliquot guttas, f. unguentum, vertici capitis utendum.

Ointments with mercury alone, or mercury given internally without antimonial sulphur; rather augment than relieve scrophulous and cancerous disorders.

Æthiops

Æthiops mineralis, or cinnabar and nitre, may be given with great advantage to scrophulous children *. Externally the *lotio penetrans* is excellent as a resolvent with a little nitre, to the tumors.

When the scrophulous swellings are spongi-ous, lax, and soft, which commonly accompany a relaxed habit; *tinctura florum martialium*, bark, and other tonics, are to be prescribed conjointly with mineral alteratives in the following manner :

The pills No. 34. may be given night and morning, and the following remedies before dinner and supper :

No. 41. R̄. Tinct. flor. martial. ʒj.

Aq. pur. ʒiv.

Sacchar. alb. q. s. f. mistura, cujus capiat
coch. j. ante prandium & cœnam quotidie.

Vel,

No. 42. R̄. Pulv. cort. peruv.

Cinnab. fact. āā ʒj. M. f. pulvis, dividendus
in viij. doses, quarum capiat j. ante prandium
& cœnam in syrupo simplici.

The metallic alteratives remove mesenteric obstructions, and chalybeates, bark, &c., give vigor to the debilitated habit.

* See treatise on the direful effects of the small pox by inoculation from negligence in a proper preparation; the king's evil, &c.

With such and similar plans, gentle purgatives being occasionally given, I have cured several inveterate scrophulous complaints of the eyes, and other parts.

Many of the cases had resisted all the common treatment, and particularly the most fashionable one, the *salt water*.

In some thousands of instances I have never known the salt water alone permanently cure any inveterate scrophulous disorder, or what is vulgarly called the king's evil. The ill success of salt water other practitioners acknowledge; but where fashion leads, the language of reason seldom prevails. To swim with the stream, is considered by the majority of mankind as the easiest passage through life.

The remedies recommended must be continued a year or two at least; but the impatience and restlessness of mankind in this disorder frequently defeat the intentions of the most judicious prescriptions; therefore, to avoid troublesome importunity, perhaps, *salt water and change of air* frequently are advised.

Scrophulous children should avoid all fruits, acids, salted foods, and vegetables.

Bread soaked in milk, if they do not suck, morning and evening, and a little animal food at dinner, give a firmer fibre than any of the common sops, puddings, &c. &c.

The diet, however, should be as dry as possible, that the distended lymphatic vessels may contract, and be reduced to their natural size *.

If the scrophulous tumors have suppurated, the cyst containing the tumor must be destroyed, if possible, by escharotics; otherwise it is very difficult to digest, incarn, and cicatrise the ulcers; the *præcip. rub.* with *ung. basilic.* is a very useful dressing for that purpose.

xvi. *Ophthalmia exanthematica*, which is caused by the measles, scarlet fever, herpes, tinea or scald head, &c.

These different causes require different treatments, which consist in evacuants, blisters, antiphlogistics, bracers, or metallic alteratives.

Externally, during the violence of inflammation mucilaginous lotions, and afterwards, the aqua vegeto mineralis, &c., are beneficial.

xvii. *Ophthalmia variolosa* is an inflammation of the eyes occasioned by the small pox.

Symptoms. After the exsiccation of the pustules, the eyes are violently inflamed; the margin of the eyelids is considerably swelled, inflamed, and sometimes excoriated; a humor

* The plans of cure, which I have long recommended, in the scrophula, or king's evil, have succeeded in the hands of many other practitioners: they are founded on an anatomical consideration of the disorder, and the great powers of medicine of the metallic class to eradicate, or remove the causes.

frequently flows, extremely acrimonious down the cheeks, the pain is acute, and the eyes cannot bear the light.

Prognostic. Unless these cases are managed very judiciously when recent, their cure is very difficult, and they remain for years, or even during life, and on every slight cold the symptoms are augmented.

Cure. Two periods of medical treatment present themselves; the first, to prevent the disease during the stages of the small pox; the other, after the suppuration and exsiccation of pustules are completed.

Prevention. During the inflammatory and suppurating stage of the small pox, when the eyelids begin to inflame, and tumefy, a collection of acrimonious serum is deposited between the eyes and eyelids; the eyelids, therefore, should be gently separated, if possible, every day repeatedly two or three times, the humor pressed out, and a light mucilaginous lotion applied to the eyes.

The edges of the lids likewise should be gently anointed, by means of a fine pencil, with a small portion of sperma ceti ointment, to prevent their adhesion.

By these methods those dreadful eye complaints may be prevented, that too frequently succeed the confluent small pox.

The

The treatment of the ophthalmia variolosa, after the termination of the small pox, should be according to circumstances.

Mercurial purges, dry diet, and antiphlogistic remedies are proper, when plenitude abounds; but for the debilitated, a purge being premised, bark and other tonics will prevail.

When the diseased eyes have long continued, nothing but a long alterative course, *extreme dry diet*, and external applications according to appearances, will prove beneficial. It should be however remarked, that no plan whatever will succeed in radically curing many cases; under such circumstances palliatives, from time to time, should be recommended, to mitigate the symptoms, and render life more comfortable, than it otherwise would be without such medical assistance.

XIX. *Ophthalmia rheumatica* and *arthritica*, not unfrequently attack gouty and rheumatic patients.

Symptoms. The eye is not very red, but discharges a very sharp acrimonious serum with acute darting pains. It is known to be rheumatic, or arthritic by the patient's being subject to these disorders.

The symptoms sometimes increase; the tunica albuginea is thickened, and the whole

membrane appears vesicular; the *cornea trans- parens* seems sunk, or is sometimes quite covered by the distended conjunctive membrane, and attended with acute pains in the head.— There are instances, which I have attended, of *arthritic chemosis* very dangerous, and difficult of cure.

Prognostic. When this ophthalmia is not very violent, the cure is not difficult; but the *arthritic chemosis* is both difficult of cure and dangerous in its consequences; occasioning a total loss of vision, either by a cataract, or opacity of the cornea.

The *cure* of the chronic, rheumatic, or arthritic ophthalmia, when slight, is effected by gentle diaphoretics of *spiritus Mindereri*, *julepum e camphora*, and *pulv. radidis serpentariæ Virginianæ*.

Stomachic bitter laxatives of *tinctura sacra*, or other aloetics, or rhubarb and *sal sodæ*.

Bleeding or saline purges are highly improper to arthritic people; when error has prescribed them, they have suddenly chilled the patient, and produced faintings, and sometimes death; therefore should be avoided.

Mucilaginous lotions, or soft emollient fomentations of decoction of poppy heads and mallows, should be frequently applied.

The spirited methods already recommended
in

in the true inflammatory chemosis, in this case would do mischief; but leeches and blisters may be applied advantageously.

In the arthritic chemosis, scarifying the distended conjunctive membrane is frequently useful, and must be repeated in proportion as it fills with fluid, or augments in size.

Pediluvia of salt and water, or spiritus salis and water, are necessary.

For the general treatment of arthritic patients, medicine must conform to various symptoms, every patient almost requiring different remedies*.

xx. *Ophthalmia complicata* is an inflammation of the eyes excited by some other disorder of the parts, as the trichiasis, trachoma, ulcer, or fistula of the cornea, synechia, lagophthalmus, ectropium, carbunculus albugineæ, pustula corneæ, hordeolum palpebrarum, any foreign matter falling into the eye.

The cure of this ophthalmia requires the removal of the exciting causes, which may be found under their proper heads.

xxi. *Ophthalmia epidemica*. The inflammation of the eyes from a catarrh, or suppressed

* For the special treatment of the gout see my treatise on that subject, with the excellent effects of baths composed of spt. salis and tepid water, &c.

perspiration, in spring and autumn are not uncommon; but in some seasons epidemic, similar to what is called the influenza.

The *causes* in this country are, generally, a north-east wind; or a sudden transition of the air from warm to cold; or an imprudent ambulation, when the sun shines after heavy rains, during the influence of a bleak northerly wind.

The *cure* is effected by light diaphoretics, as it is caused by suppressed perspiration; pediluvia, warm bath, gentle laxatives, and externally by the aqua vegeto mineralis.

xxii. *Ophthalmia periodica*, or intermittent, is a periodical inflammation of the eyes or eye, which, like the intermittent fever or ague, is absent and returns at stated periods.

The *periodical ophthalmia* is most commonly quotidian, seldom tertian, and rarely a quartan.

Pallid lips and countenance, with a debilitated habit of body, are commonly amongst its characteristic symptoms.

It is sometimes accompanied with an intermittent pain in the head, immediately over the *frontal sinus*, which seems to occupy so small a space, that the pained parts may often be covered with the point of a finger.

In some instances the eyes are red, and very much inflamed, in others the vessels of the conjunctiva are much distended, but not with red blood.

This species of inflamed eyes has not been hitherto accurately observed, though very common in this country, particularly in the aguish counties of Kent, Essex, &c.

Bleedings have been prescribed, leeches have been applied to the sinus frontales, and blisters behind the ears; purges have been repeated, and cooling remedies, with various lotions, for weeks, nay months; but they have always rendered the disorder more violent, and difficult of cure.

Some instances of blindness have followed such erroneous treatment; for through the long continuance of the inflammation in the eyes, the cornea has become obscured.

The *cure* is successfully obtained by giving bark and vitriolic acids during the intermission in large doses, and often; having premised a stomachic bitter purgative.

If the viscera should be diseased, however, which is not uncommon in intermittent fevers, &c., *bark* sometimes will not succeed: in such instances the following prescriptions rarely fail of removing intermittents.

No. 43. R. Calomel. ppt. gr. vj.

Extract. cathart. ℥ij. M. f. pilulæ No. xij.
quarum sumat j. omni nocte.

No. 44. R. Pulv. cort. peruv. ℥ij.

Decoct. ejusdem ℥vij.

Tinct. amar. ℥j.

Vitriol. alb. gr. ij.

M. f. mistura, cujus capiat coch. ij. vel iij.
secunda vel tertia quaque hora, absente capitis
oculorumve dolore.

If the cortex should purge, after giving a dose of rhubarb, a mixture of *extractum ligni campechensis* dissolved in simple cinnamon water, will restrain the diarrhœa much better than opiates.

The *intermittent ophthalmia* having been little understood, and very erroneously managed, has been an inducement to treat it in this particular manner; it certainly may be classed by the nosologists as a new disorder accompanying the intermittents.

Externally, first should be applied *lotio mucilaginosæ*, and when the inflammation has subsided, the *aqua vegeto mineralis*, or some light vitriolic lotion.

OPHTHALMODINIA.

Ophthalmodia is a vehement pain in the eye, without, or with very little redness.

The sensation of pain is various, as itching,
burning,

burning, or as if gravel were between the globe of the eye and lids.

The species are :

I. *Ophthalmodinia rheumatica*, which is a pain in the muscular expansions of the globe of the eye, without redness in the albuginea.

The rheumatic inflammation is ferous, and rarely produces redness.

If the ophthalmodinia rheumatica should be acute, it must be treated as the acute rheumatism by bleeding, purges, and antimonial diaphoretics; but if chronic, which is oftener the case, by light diaphoretics, alteratives, guaiacum, and vesicatories behind the ears.

Vapors of vinegar and water likewise remove this rheumatic ophthalmodinia.

II. *Ophthalmodinia periodica* is a periodical pain in the eye without redness.

It is cured in the same manner as the intermittent ophthalmia already mentioned.

III. *Ophthalmodinia spasmodica* is a pressing pain in the bulb of the eye, arising from spasmodic contractions of the muscles of the eye in nervous, hysteric, and hypochondriac persons.

It is observed to terminate by a flow of tears.

It is to be treated with nervine and anti-spasmodic

spasmodic remedies, as camphor, valerian, asafœtida, musk, &c. *.

iv. *Ophthalmodinia* from an internal inflammation of the eye.

In this disorder there is a pain and sensation as if the globe was pressed out of the orbit. See *phlegmon oculi*.

v. *Ophthalmodinia hydrophthalmica*. After a great pain in the inferior part of the os frontis the sight is obscured, the pupil is dilated, and the bulb of the eye appears larger, pressing on the lid.

This species is likewise perceived, from an incipient hydrophthalmia of the vitreous humor.

The cure is to be attempted by bleeding, purges, and extreme dry diet; but it often degenerates into an *hydrophthalmia*.

vi. *Ophthalmodinia arenosa* is an itching, and a sensation of pain in the eye, as if sand or gravel were lodged between the globe and lid.

The cure is sometimes easily acquired by lotions of the mucilaginous kind, or vegeto mineral water.

vii. *Ophthalmodinia symptomatica*, which is

* See the treatise on female, nervous, hysteric, and hypochondriac diseases, &c.

a symptom of some other eye disease; and is to be cured by removing the exciting cause.

VIII. *Ophthalmodinia cancrofa*, which arises from cancerous acrimony deposited in the eye, and is rarely curable. See *carcinoma oculi*.

Varices of the Conjunctiva.

Varix of the conjunctiva is a dilatation of the veins of that membrane.

The *cause* is, a laxity of the coats of the veins, by which they are enlarged by the contained fluid.

The species are :

I. *Varicositas simplex*, or a simple varix, which remains after inflammations of the eyes.

The *cure*. The aqua vegeto-mineralis, or vitriolic lotions, should be applied to strengthen and contract the relaxed coats of the veins.

II. *Varicositas complicata*, with a *pterygium* : the *cure* requires, that the varicous vessels from the canthus of the eye to the root of the *pterygium* should be divided by a lancet, or knife, transversely.

Astringent lotions are afterward to be applied.

For the cancerous varix of the eye, see *carcinoma bulbi*.

Ecchymosis

Ecchymosis Conjunctivæ.

Ecchymosis conjunctivæ is an effusion of blood in the cells of the conjunctive membrane.

There are sometimes only livid or red spots to be observed in the white of the eye, in other instances the whole, or half the conjunctive membrane is discolored with effused blood.

The species are :

I. *Ecchymosis violenta*, or the violent ecchymosis, which arises from a stroke, or some such accident.

This species is usually complicated with inflammation.

II. *Ecchymosis spontanea*, which appears without any previous contusion, and is caused by vomiting, coughing, or violent laughter.

These last species are without danger, and generally are cured by the liquefaction and absorption of the matter contained in the membrane*.

This is commonly produced by vapors of vinegar and water, or by emollient warm fomentations.

* Whoever reflects on the termination of bruises by resolution, must observe three stages of the discoloration; which first is the extravasation of blood in the tela cellulosa; the second the liquefaction of this extravasated matter; and the third its perfect absorption, by which the skin acquires its former and proper color.

Pustula

Pustulæ Conjunctivæ.

Pustules of the conjunctiva are vesicles tinged with pus, which happen chiefly towards the limbus of the cornea.

The species are :

I. *Pustula vulgaris*, which arises from an angular ophthalmia.

The inflammation being treated in the usual mode, the pustula is soon cured by rupturing, and it is excicated by external applications.

II. *Pustula acrimoniosa*, which is excited by venereal, morbillous, or variolous acrimony.

The cure depends on removing the disorders that gave rise to the pustules.

Phlyctæna.

Phlyctæna is a vesicle filled with water, or rather sharp limpid serum.

The species are :

I. *Phlyctæna indolens*, which is similar to an hydatid.

The cure is performed by incision, and excication with drying collyriums.

II. *Phlyctæna ardens*, which reddens in the limbus of the cornea, and is painful.

This arises from various species of acrimony,
and

and frequently degenerates into the worst ulcers of the cornea.

The *cure*. The inflammation must be first removed, then astringent lotions exsiccate the remaining parts of the vesicle.

Papula,

Is an hard tuberculum in the conjunctiva of the eye.

The conjunctiva has, sometimes, many such *papulae*.

The *cause* seems to be an induration, or an accumulation and coagulation of fluids in the capillary vessels; either from an effusion, or want of absorption by the small lymphatics.

This tuberculum is cured by the *lotio penetrans* externally applied, and, if necessary, by proper medicines of the mineral alterative class internally.

Caruncula,

Is a soft red papula growing out of the conjunctiva, similar to a fleshy caruncle*.

The *cause* appears to be a transudation of lymph and blood collected in a cell, forming a tuberculum, or small caruncle.

* By the Greeks it is called Ἐπαναθήμα.

The species are :

I. *Caruncula simplex*, which is without any other disease of the albuginea, and is cured with vitriolic lotions.

II. *Carunculæ complicatæ*, which are accompanied with ulcers, or other diseases of the conjunctiva.

They are cured by the *lotio vitriolica*, or by an escharotic, namely, the *butyrum antimonii*, which should be used with great circumspection, lest it injure the surrounding parts.

Carbunculus Oculi.

A carbuncle of the eye is a tubercle in the albuginea, or in the cornea itself, from the commencement red and hot, then degenerating into a gangrenous crust.

The *proximate cause* is a carbunculous miasma.

This disorder produces a sphacelus of the eye, blindness, and sometimes death.

The *cure*. Externally, mucilaginous lotions with camphor, or *aqua vegeto-mineralis*; internally, the cortex peruvianus, camphor, and other antiseptics are proper.

Ulcus Conjunctivæ.

Ulcus conjunctivæ, or an ulcer of the conjunctive membrane, is a purulent solution in that membrane.

The species are :

I. *Ulcus simplex*, which arises from a preceding inflammation.

It is cured by mucilaginous, detergent, and conglutinating lotions.

II. *Ulcus venereum*, or venereal ulcer of the conjunctiva, owing its origin to a venereal infection, or pustules of the conjunctiva remaining after inflammation.

The cure is obtained by a cinnabarine fumigation, or the *lotio penetrans*, and other anti-venereal remedies.

III. *Ulcus scrophulosum*, or a scrophulous ulcer of the conjunctiva, caused by a scrophulous acrimony, and distinguishable by the diagnostic symptoms of this disease.

It is cured by cinnabarine fumigations, and the *lotio penetrans*, with mineral alteratives internally.

Aliena Oculis illapsa.

Are extraneous bodies insinuating themselves between the eye and lids, as sand, gravel, hairs, splinters, insects, sparks, or iron filings, &c.

These

These bodies cause a nictation, flow of tears, pain and inflammation of the eye.

The species are :

Extraneous substances between the globe of the eye and eyelids.

These bodies are extracted by washing the eye with some mucilaginous wash, or water; or can be removed by pressing them towards the internal canthus with a finger.

Extraneous bodies are likewise removed by the tongue of another person licking the parts; but this should be done cautiously *. A quill armed with a soft sponge, a fine hair pencil or feather, are proper for the same purpose, also the point of a probe or forceps, &c.

If lime should have fallen into the eye, which happens to plasterers and bricklayers, it frequently renders the cornea opaque, and inflames the eye.

Surgeons seldom see this case soon enough after the misfortune, otherwise a little vinegar and water would remove the caustic qualities of the lime, and neutralise it, and prevent the

* In the latter end of the year 1763, while I attended the late Dr. M'Kenzie's midwifery lectures, a poor woman at the lying-in house in the Hop-garden, who was infected with the venereal disease, licked her infant's fore eyes, by which, in about a fortnight, the eyes suppurated, burst, and caused a total blindness.

mischiefs; which I have often known amongst the workmen of the Marybone builders, contiguous to my residence.

Washing the eye after, with warm water, to remove any remains of the lime, with the use of the eye cup, is proper, then mucilaginous lotions are necessary to prevent irritation, and lastly the aqua vegeto-mineralis.

The inflammation of the eye must be treated according to its violence.

II. *Extraneous bodies fixed in the cornea, or conjunctiva.*

These must be removed by the forceps, the point of a probe, or any other apt instrument.

If the place requires dilatation to extract the foreign substance, it should be performed with a knife, lancet, or couching-needle; the eye being confined by the *speculum oculi*, which I shall recommend hereafter. The same instrument is useful on many other occasions, as it acts on the muscular expansions of the globe of the eye, keeps it steadily fixed, turns the lids outwardly, if necessary, and renders all operations on the eyes and lids perfectly safe, and easy to the operator.

Steel filings may be removed from the eye by a magnet, unless insinuated within the membranes, which is no uncommon case.

Morbi Corneæ, or diseases of the Cornea.

Obscuratio corneæ is a perfect or imperfect impellucidity or opacity of the cornea.

It is known by the change of color in the cornea, obscurity, or loss of vision.

The *proximate causes* are :

I. An effusion of humor between the lamellæ of the cornea.

II. A stagnation of serous humors in the vessels.

III. A coagulation and concretion of the vessels and fibres that compose the cornea.

IV. Variolous or morbillous matter eroding the coat, or forming pustules between the laminæ.

The *remote causes* are :

I. Inflammation of the cornea.

II. The heat of violent fire, or fumes of mineral acids.

III. A deposition of variolous, venereal, or scrophulous matter in the laminæ of the cornea.

IV. The injudicious application of pultices of bread and milk; roasted apples; alum and the yolk of eggs; pigeon's dung; and such like injurious remedies, while the eyes were inflamed.

More have been blinded by pultices than all other misfortunes of the eyes collected together: this my long experience confirms.

The *effects* are amblyopia, if obscure; total blindness, if the whole should be opaque; a half vision, if half the cornea should be affected; an oblique vision, if a corner of the cornea remains transparent.

The obscuration of the cornea is divided into,

I. *Imperfect* or *nebulous*; when the whole cornea is not quite pellucid, and is obscured as with a cloud or smoke.

II. *Perfect* or *opaque*, when the whole cornea is yellow, grey, whitish, or bluish, and the patient is totally deprived of sight.

Prognostic—I. Opacities, or imperfect obscuration of the cornea, are frequently curable, when recent, by the internal and external methods I have invented, and which will be here, without the least reserve, communicated.

II. When the opacity has been long confirmed, little success can be rationally expected.

III. When the external lamina is only affected, there is greater reason to hope for success, than when the whole body of the cornea is opaque.

IV. There is no possibility of removing an opacity

opacity of the internal lamina, except by medicine internally, and a very exact regimen; but these too often fail.

v. Specks are easier cured, and are less dangerous than an universal opacity.

vi. When the humors of the eye are evacuated, which has often happened from pul-tices promoting suppuration, no relief whatever can be obtained, except the application of an artificial eye, to remove as much as possible the deformity.

To conceive clearly the nature of specks, or opacities of the cornea, when I formerly practised surgery, every opportunity was seized to investigate the real causes of these and other obscurities in vision, by anatomical examination after death*.

Anatomical injections of the most minute fluids, as ætherial oil of turpentine and vermilion; ichthyocolla dissolved in spiritus vini and carmine; and quicksilver alone, were the principal substances forced into the arterial system by injection.

i. The injections passed to the opaque parts, but could not be forced through.

* Some physicians think it a reproach to have been a surgeon; for my own part, I think it an honor for every one to comprehend all branches: the more extended our knowledge is, the more capable we are of removing all diseases.

II. The injections sometimes could only be forced to the limbus of the cornea, particularly when the whole cornea was opaque.

III. It appeared in some instances, that the opacity was occasioned only by a distension of vessels.

IV. In other cases there was evidently a coagulation of fluid, which on microscopical examination appeared to be an effusion of serum or concremented lymph in the cellular structure of which all membranes are composed. This was only evident after maceration.

The conclusions from these anatomical experiments are :

I. That when the vessels of the conjunctiva are only affected by distension, the cure may rationally be expected from internal remedies, and a proper regimen.

II. That when the cellular structure of the conjunctiva has been filled with coagulated lymph, or serum, no solution or absorption of the effused matter, on which alone the pellucidity can be restored, is to be hoped.

III. That though escharotics may remove the opacity, if external ; yet, if the coat be thoroughly affected with an effused coagulated matter, the destruction of the diseased part cannot restore the transparency of the cornea, nor answer any beneficial purpose ; but on the contrary,

trary, has produced an incurable ulcer of the cornea. If a perforation should communicate with the anterior chamber of the eye, a constant oozing of the aqueous humor has been an additional evil: this I have seen happen in a few instances, where the aperture in the cornea was very small, from paring an opaque cornea with a knife.

iv. That it is difficult to ascertain by appearances, whether the vascular system of the cornea is pervious, or not; for in cases wherein I had no reason to expect success, I have removed the opacity, and restored the blind to sight by the modes hereafter recommended: on the contrary in other instances, where the disorder apparently was slighter, no success has followed the utmost endeavors to remove the complaint.

The indications of cure in the obscurity or opacity of the cornea are:

i. In the mere distension of the vessels, when joined with inflammation, the modes of treatment, more or less powerful, as recommended in the ophthalmia, are to be prescribed; namely, to deplete by evacnants, and prevent a fresh supply of blood to the parts by an extreme *dry* and abstemious diet *.

The *lotio penetrans* should be frequently ap-

* See cases of blindness from opacities of the cornea, how removed.

plied,

plied, with gentle friction, unless it should give pain to the inflamed parts.

Such a penetrating lotion being absorbed, joined with gentle friction, has frequently prevented or dislodged accumulations in the cornea, which might have coagulated, and occasioned incurable blindness.

II. To remove the turbid humors; penetrating internal medicines are to be prescribed and repeated.

No. 43. *R.* Tart. emet.

Merc. corr. sub. āā gr. j. solve in julep. c
camph. ℥j. deinde adde

Sal. nitri ʒij, M. cujus capiat ʒss. vel ʒj.
in coch. iij. decocti nitrosi ter in die.

A little bread dipped in milk is all the food that should be eaten, and even that sparingly.

The *lotio penetrans* is the properest external application, with repeated friction, to excite warmth, and the resolution or dispersion of the impacted matter.

II. In the recent coagulation of the humor in the vessels or cells of the membrane, or between the numerous laminæ, which are about 2000, *stratum super stratum* *; the liquefaction of the concremented matter may be first attempted by warm vapors of vinegar and water, or fumigations of cinnabar.

* Zinn, *Anatomia Oculi*.

The absorption should be promoted by the most powerful mineral alteratives internally, as the *pulvis alterans* in pills of one or two grains three times a day, with the solutions of nitre and camphor after each dose.

The mercurial and antimonial solution already prescribed may be exhibited for the purpose of forcing on through the vessels, by its subtilty, the nebulous, impellucid fluid, or stagnated matter.

All obstructions of the viscera and other parts are best and most decidedly removed by mercury and antimony, as alteratives, or chalybeates; shall their force then be wanting in preventing blindness, or restoring vision, that most important of blessings?

The treatment is *new*, but it has proved in many instances successful. Physicians or surgeons, therefore, neither perform the duty they owe the public, nor discharge the honorable and important trust reposed in them, if they neglect improvements so unreservedly communicated, and so beneficial to society. These reflections were unnecessary, had not long experience proved, that some practitioners, having obtained the public confidence, have violently opposed every new doctrine not of their own invention, or ushered to the world under their auspices.

The

The humor or coagulation in the cornea being liquefied, dissolved, or absorbed, the opacity is removed, and sight either partially, or perfectly restored.

Those indications delivered are of a general nature, but some are particular, and require a peculiar treatment.

These particular indications are not formed from the appearances of the disease, but from the state, habit, age, sex, or constitution of individual patients.

iv. Opacities of the cornea in relaxed habits with a pale countenance, and debility in the moving or muscular powers, require *tonics* of bark, vitriol, chalybeates, cold bath, and invigorating or bracing remedies, with a nutritious, but *dry diet*.

In such instances a greater elasticity in the fibres, and a more firm texture in the blood, should be procured by every mode, theory and experience in medicine can suggest.

These latter modes of treatment are diametrically opposite to the former; but they are equally successful, when judiciously applied.

v. When the disorder has remained a considerable time, the methods of treatment having been determined with clearness and precision, should

should be a long time continued. In many instances a perfect cure cannot be acquired; yet in others sight has been thoroughly, or partially restored. In such a serious circumstance as loss of vision, the physician is justified in applying every rational method of cure, experience, theory, and reasoning can invent, in opposition to that rank empiricism, in disorders of the eyes, which has, and does prevail.

VI. External applications are useful to destroy the opacity, where the internals fail; and sometimes they may be conjointly prescribed.

The indication, then, is to remove the diseased part; but to blow powdered glass into the eye, or use escharotics to the whole globe of the eye for this purpose, is erroneous and cruel.

The opacity is partial, but such powders spreading, act equally on the sound and unsound parts; on the albuginea as well as cornea. The albuginea not being diseased, why should such a powder, or any other escharotic, be applied over the whole eye, when the disease is partial? Custom and fashion, without reflection or reasoning, are the causes of such absurd and painful practices.

The remedy should be applied only to the
part

part affected in the following manner once, twice, or thrice in the day :

Let the globe of the eye be held steady, by an extended speculum oculi in the left hand ; then, having a piece of sponge fixed in a crow quill moistened in the liquor to be used ; rub the sponge gently over the surface of the obscured cornea, speck, &c. so as not to press out any of the liquid, or the least possible, except on the diseased part.

The same operation may be performed with a fine hair pencil, or with fine lint fastened on a skewer, or probe.

Without the use of the *speculum*, the eye will not remain steady ; but if there should be any objection to a speculum, the finger and thumb is to be placed on each angle of the eye, and by gentle pressure the eye will be fixed steady, as in extracting the cataract.

By some little attention and practice this may be performed with facility ; but the operator should be *ambidexter*, to enable him to apply the remedy to either eye.

The *lotio penetrans* can be used as a collyrium, but this never injures the conjunctiva or cornea, and is intended to gently deterge, or penetrate and remove obstructions by absorption ; therefore the solution should be stronger, when intended as an escharotic ; as two or three grains

grains of *mercurius corros. sub.* to an ounce of water, perfectly dissolved.

It has been already observed, that the laminæ of the cornea amount to 2000 or more, placed one over the other; it frequently happens that the opacity or blindness only penetrates a few of the external laminæ, particularly when the disorder arises from external causes.

The eye being examined in a side direction, it is easy to discover, in general, how far the cornea is affected, and on that circumstance the hope of relief should be founded.

Paring the diseased cornea with a knife is a more expeditious, but less safe mode of removing the opacity. It requires great steadiness in the operator, and calm resolution in the patient; or by accident the incision may be carried too deep, and occasion a continual oozing of the aqueous humor. If the wound be large, the chrystalline lens may be projected through the pupil by being forced from its bed, with the vitreous humor, and then an incurable blindness may be the consequence.

I have used both methods successfully; but the foregoing caution was necessary; for the accidents mentioned have happened to incautious or timid operators.

The cornea knife used in extracting the cataract

taract is very proper for the operation; or a common bistory may be used.

Other escharotics have been applied, as *pulvis boracis*, *alumen ustum*, *sal tartari*, *lapis infernalis*, *butyrum antimonii*, *mercurius præcipitatus ruber*, *tartar. emeticum*, *auripigmentum*, and even aloes, &c. A few grains of the above medicaments have been dissolved in one ounce of water, or honey, and applied to the obscured cornea; but many of these are hazardous. I have rarely recommended any, except the solution of corrosive sublimate, and it has frequently succeeded, when assisted by proper internal treatment.

The external applications and internal remedies for removing the opacity or specks, require daily repetition for many months, and in some cases years. Whoever expects a rapid cure, unless in inflammation, will be disappointed. No appearance of amendment has happened for two, three, or four months; yet afterwards, by perseverance, cures have been effected in many hopeless instances.

The opacity of the cornea, however, being more frequent amongst children from dentition, measles, small pox, scarlet fever, &c. &c. their treatment must be delivered.

No assistance can be obtained in young children from external applications, unless they are
very

very pliant; therefore, dependence must be chiefly placed on internal medicines taken by the nurse, if the child should suck, if not, the remedies should be administered to the child.

The *nurse* may be treated with mineral alteratives, nitre, æthiops mineral, cinnabar, &c.; but *purgatives* must be *avoided*, as they would defeat every intention of cure.

These remedies will certainly pass from the *nurse* to the *infant* in the *milk*, and many remarkable cures under my direction, by these modes of treatment, have been happily accomplished*.

The

* One very extraordinary instance may be mentioned—A child was brought to the Foundling Hospital born blind, in short, no eyes were to be seen, but in their place two protuberating pieces of flesh, which had an appearance of raw meat. The medical gentleman who presided over the hospital declined attempting any thing, but wittily observed, that remedies might as well be applied to the cuff of his coat as to the blind infant, and spurned with contempt every idea of relief. Mr. George Whatley, the treasurer of the charity, the most benevolent of mankind, and my worthy friend, sent the infant for my opinion.

The case was very extraordinary; but I undertook to try the force of medicines given to the nurse, and Mr. Whatley maintained the poor destitute woman during the attempt.

The infant seemed in continual pain, and all I proposed was, to lessen or remove the inflammation, and to mitigate the pains.

I gave the woman a pill of *twelve times sublimed calomel*, well washed, and *sulphur auratum antimonii*; these ingredients

The forms of prescription for children are the following; which may be augmented, diminished,

were triturated together for 12 hours, by which the powder becomes perfectly alterative, and never acts either purgative or salivant.

From one to two grains was the dose given, three or four times a day : after each dose was given half a dram of nitre dissolved.

The woman was directed to avoid all greens, fruits, and acids, as vinegar, &c. She took smaller portions than usual of tea and milk for breakfast ; eat plain meat for dinner, with a little porter as drink.

In the course of six weeks, by these modes of treatment to the mother, without any *external* application to the eyes of the infant, the red flesh, which proved to be an enlargement and extraversion of the lids, was so reduced in size, that the globe of the eyes could be seen ; but the cornea of both were opaque, not admitting the least ray of light. This was repeatedly confirmed by trials with lighted candles, and other conclusive modes.

All that was first intended, was performed ; namely, the reduction of the red flesh, and removing pain. The infant, from continually crying, became perfectly tranquil, and the eyelids were nearly of a proper appearance in about the third month.

No farther prospects of relief striking me, I was declining attendance ; but the earnest solicitude of the mother to continue the plan, obliged my friend Mr. Whatley to comply in her maintenance, and myself to continue the remedies, a little more forcible, and withal more penetrating.

To the dissolved half dram of nitre I added the sixteenth of a grain of *tartar emetic*, and the same quantity of *mercurius*

minished, or varied according to the will of the prescriber.

No. 46. \mathcal{R} . Cinnab. fact. 3j.

Pulv. e tragacanth. c. \mathfrak{S} ij. M. f. pulvis divi-

rius corrosivus sublimatus; these most powerful auxiliaries in medicine were taken in three ounces of water.

The woman was of a robust, healthy constitution, and bore these small doses of the remedies with perfect ease: they had no operative visible effect, as indeed they seldom have, except in gradually removing diseases, therefore acted, as was intended, perfectly as an alterative.

In about three months after the infant began to have some glimmering of light, and the cornea of one eye appeared partially transparent, so that he has sufficient vision to discern objects.

The joy this occasioned, not less to myself and friend Mr. Whatley than the poor woman, induced us to continue the same plan, and some little light pervaded the other eye, after a long perseverance in the remedies.

A period of near eight months had elapsed, and the infant was taken from the mother, to be baptized at the hospital and sent into the country to be nursed, according to the custom at the Foundling Hospital.

As the infant was brought to be baptized, Mr. Harrison, one of the governors of the charity, suddenly stepped up, and directed the name to be William Rowley, as a compliment for my attendance and success.

This is, amongst many, the strongest instance I have ever seen of the efficacy of administering remedies to the nurse for diseases of infants: but such facts well merit the attention of every humane practitioner in physic and surgery.

Afterwards, for a year or two, I recommended ten grains of nure to be given to the child three times a day.

dendus in viij. doses, quarum capiat unam mane
& nocte.

No. 47. *Rx.* Sal. nitr. ʒss. solve in
Aq. pur. ʒviij. Sacchar. alb. q. s.
M. pro potu ordinario cum lacte.

No. 48. *Rx.* Kerm. min. gr. viij.
Calomel. ppt. gr. iij. M. accurate, deinde
adde Conserv. rosar. q. s. f. pilulæ No. xij. qua-
rum sumat unam omni nocte, vel mane & nocte.

No. 49. *Rx.* Sal. nitr. ʒss.
Magnet. alb. ʒij.
Aq. pur. ʒiv.
Sacch. alb. q. s. f. mistura, cujus sumat coch.
parvum ter vel quater in die.

No. 50. *Rx.* Sulph. aurat. ant. ʒss.
Calomel. gr. v. tere simul, deinde adde
Conf. rosar. q. s. f. pilulæ No. xxx. quarum
sumat j. bis in die superbibendo coch. j. aquæ
cum pulvere sequente

No. 51. *Rx.* Æthiop. min. ʒss.
Sal. nitr.
Pulv. e tragacanth. c. āā ʒij. M. accurate, &
f. pulveres No. xxx.

These and similar remedies are necessary, if the nurse and child should be of a plethoric or tolerable healthful constitution; if either should be pallid, or debilitated, then tonics of bark, &c. are useful; but vitriolic acids are neither proper for suckling women, nor young infants, as they coagulate the milk.

In all cases, not only of inflammation in the eyes, but in the opaque cornea, the strictest injunc-

injunctions, with regard to regimen, have been strenuously advised. Humid diet, and slops of all sorts were forbid, unless to nurses who suckled infants; moderate nourishment and a sufficient quantity of liquid aliment being necessary to them, for the secretion of milk. The more strictly patients submit to a *dry diet*, the sooner the cures are accomplished; but if they swallow large draughts of *diluting* liquors, which are too commonly, though irrationally, advised in inflammations, the cures will either be very tedious, or altogether impossible.

The different species of obscuration, or opacity of the cornea may be enumerated, and their particular treatment mentioned; but the antecedent observations on the subject will enable every reflecting and able practitioner in medicine, or surgery, to apply means of cure quite superior to any before practised: this assertion abundance of successful experience justifies.

1. *Opacitas ab inflammatione*, or opacity from an inflammation of the cornea:

This is cured by means similar to the ophthalmia, by bleeding, mercurial and other purges, abstinence, blisters behind the ears, or to the neck, &c.

Externally, mucilaginous, saturnine, or vitriolic lotions are to be used according to the stages of the inflammation.

II. *Opacitas vulgaris*, or a common opacity without any specific cause.

The *cure* requires penetrating resolvent remedies, and the *lotio penetrans*.

III. *Opacitas venerea*, or venereal opacity, which commonly remains after a venereal ophthalmia, or from the venereal virus deposited in the cornea, as in infants from infected parents, or from venereal matter introduced by accident, or through ignorance to the eye *.

Practitioners should always investigate causes, or attempts to cure will be useless, or injurious.

Many melancholy instances have happened of venereal affections in the eyes being mistaken for common inflammations, or opacity of

* A remarkable instance of this happened to a man, who having some slight cold in his eyes, used to wash them with his urine, while he labored under a recent venereal infection, or gonorrhœa. The consequence was serious; for it communicated the infection to his eyes, and a chemical physician who understood more of an elaboratory than practical medicine, having read in *Kunckell*, that *red mercury præcipitate* was excellent to remove an opacity, he boldly used the method, without reasoning or reflecting either on the extreme nervous irritability of the eye, or the violent effects of the application. An incurable blindness was the consequence. Chemical reasoning should be more cautiously applied to practical medicine: without a foresight of effects, physic may be dangerous.

the cornea; by which unskilfulness, vision has been irrecoverably lost, before the disease has been discovered. Numerous tormenting applications, as blisters, setons, caustics, issues, and immense loads of internal physic, have been prescribed without success, where mercurials as alteratives, &c. should alone have been depended on *.

The cure of the *venereal obscuration* should be similar to the modes recommended in the venereal ophthalmia. The nurse should take the *mercurius gummosus*, or anoint with a light mercurial ointment, so as never to excite salivation, or quicken the pulse.

If the infant does not suck, the *mercurius gummosus*, light mercurial ointments, or other remedies, may be used according to circumstances, and always gentle. The cure of the

* The celebrated *Sauvages*, and other illustrious medical authors affirm, that these *obscurations* in infants' eyes are incurable. It would have been more honorable for these learned physicians to have said, that they were unacquainted with any mode of cure. The former declaration prevents, the latter might have excited some humane practitioners to make attempts. The *magister dixit* should not be implicitly obeyed in medicine; but where the art is defective, industry should remove its defects. Many instances have been cured of obscured vision in children, and others from venereal infection, by the methods here recommended.

venereal infection in children should be attempted by very flow means; for their tender frames cannot bear being overloaded with mercurials. A safe, though tedious, is superior to a hasty cure, attended with hazard.

The *lotio penetrans*, or *gummosa mercurialis* and the *balneum mercuriale*, are the properest external applications, wherever they are practicable.

iv. *Opacitas serophulosa*, or opacity from the serophula or king's evil, is cured, according to circumstances, by mineral alteratives, and antiphlogistics, as cinnabar, æthiops mineral, the pulvis alterans in pills, kermes mineral and calomel in very small doses; or in relaxed habits by bark, steel, other tonics, and occasionally a calomel pill, to remove or prevent visceral obstruction.

v. *Opacitas variolosa*, or the opacity from the small pox, which arises after the suppuration, or exsiccation of the pustules.

The *prevention* has been already mentioned, by opening the lids, and evacuating any matter lodged on the globe of the eye repeatedly, during the different stages of the small pox.

The cure of the opacity requires the general remedies already directed, to which for children may be added the following:

No. 53. R. Solutionis antimonialis ℥ss,

Aq. pur. ℥vss.

Sal. nitr. ℥ij. Sacch. alb. q. s. f. mistura,
cujus infans capiat coch. parvum (vulgo dictum
pap-spoon) ter vel quater in die.

The alterative penetrating pills already recommended may be prescribed conjointly with the mixture, but neither should be given in such doses as to excite vomiting. A great quantity of blood is thrown up into the head, the vessels of the eyes are distended by vomiting; therefore in all diseases of the eyes vomits should ever be avoided.

Salt water bathings, or the sea air, do not cure the scrophulous ophthalmia, opacity, or any other inveterate scrophulous complaint; innumerable flocks of children, or others, are annually sent for these purposes; they return, certainly amended in their general health, which might happen from change of air, if they went to any other part of the country; but not one in a hundred returns perfectly cured of that inveterate disorder the king's evil, or scrophulous indurations, or ulcers about the neck, or arms, &c.*.

* See treatise on the scrophula, its nature, and difficulty of cure, &c. In the *Schola Medicinæ* are delineations in plates, with figures shewing the precise situation of all the lymphatic vessels and glands, &c. These throw a great light on disorders of the scrophulous kind.

There

There are many false notions about the king's evil, particularly that of the disorder being mitigated, or cured by nature towards puberty, or in females after the first menstruation: nothing is more *false* than this opinion; for amongst the numerous conflux of poor, which apply for advice on public days, at my house, numbers of scrophulous patients can at times be produced afflicted with the disease, from the ages of one, two, or three years, to forty or fifty*.

VI. *Opacitas corneæ*, from the *rhytidosis*, or *staphyloma*, is removed by the cure of those diseases. See *Rhytidosis* and *Staphyloma*.

* This supposed cure at puberty was made a prize question to determine, *Why at that age the scrophula cured itself?* This occupied many wise heads for its discussion. The learned members never inquired, whether the question was founded in facts; but like the curious investigators concerning the child being born with a *golden tooth*, which long engaged the learned academies and universities of Europe with various arguments, speculations, and reasonings to account for so strange a phenomenon, without, first, ever thinking about the possibility or impossibility of the subject in dispute, or whether the question was founded on a fact. These and many other curious histories of learned bodies with credulous professors, are ample, and ridiculous testimonies of stupidity, folly, and credulity in the head of the superior, and its rapid diffusion and transmission to the various component members. Artifice acting on vulgar faith has produced most of the grand revolutions in empires, governments, and religions; but faith without judgment is dangerous in medicine.

VII. *Opac-*

VII. *Opacitas corneæ complicata*, which arises from chemosis, staphyloma, ulcers, and other diseases of the conjunctiva or cornea.

The *cure* requires the removal of the primary or exciting causes.

Maculæ Corneæ.

Maculæ corneæ are obscurations, or opacities or specks in any particular part of the transparent cornea.

The *causes* are similar to the foregoing opacities or obscuration of the cornea.

The *Prognostic*.—If the specks or opacities should not be in the direction of the pupil, or in such a situation as to impede vision, they are of little consequence, except from their deformity.

There are six species of maculæ or specks of the cornea :

1. *Macula semipellucida* is a semipellucid spot or speck, in appearance nebulous, cloudy, or like smoke, impeding the rays of light.

The *cause* is a gross humor stagnating in the pellucid vessels of the cornea.

It is *cured* by the *lotio penetrans* and proper internals already recommended in the common opacity.

II. *Macula opaca, seu leucoma*, is a speck altogether

together opaque, either of a white or yellow color; it is also called *albugo*.

It *arises* from an opaque humor effused between the *lamellæ* of the cornea.

The *cure* requires escharotics to destroy the diseased parts, sometimes the *butyrum antimonii* is necessary, but it should be used very cautiously, as it is a very active caustic.

If any of its *caustic qualities* should spread on the globe of the eye, it should be diluted by rapid and *frequent ablutions* of warm water.

III. *Macula margaritacea*, seu *paralampsis*, is a very opaque speck or spot of a white or bluish color, in the figure of a pearl, elevated like a tubercle, and indurated.

This species is scarce ever curable, for it commonly penetrates through all the *laminæ* of the cornea; yet the following methods have been attempted, and in some instances have succeeded; they cannot, however, be too cautiously practised.

When patients are totally blind, any rational attempt to relieve is better than totally deserting them to the misfortune; they cannot be worse; therefore the art is justified in applying remedies, which if unsuccessful, the sufferer is left in the same situation he was before.

i. The *external superficies* of the opacity should be touched with lapis infernalis, or a drop of butyrum antimonii, *spiritus nitri fumans*, or auripigmentum mixed with honey; the eye being held firm by an *extended speculum*.

ii. The tubercle may be abraded with a steel raspatory.

iii. With a bistory the diseased part can, by degrees, be pared down to the transparent lamellæ, provided the cornea is not thoroughly affected; or in some instances it may be cut off.

iv. It is perforated by a needle with several punctures, by which means it separates.

v. Scarification with very small incisions, and afterward by applying some detergent, or in some instances an escharotic, it has been reduced by suppuration.

The greatest accuracy and caution are necessary to avoid giving the patient unnecessary pain, or perforating the transparent cornea; which last would evacuate the aqueous, chrySTALLINE, or vitreous humor, sink the eye, and increase the deformity.

Where darkness or blindness really exists, attempts to produce even partial vision may be humane; but the ingratitude of mankind is frequently injurious to the operator, if he should

should not perform more than the nature of the case permits.

When persons have been totally blind, and could not be rendered worse, the pitying breast of humanity has induced practitioners to attempt something.

They have candidly, on first examination, pronounced the sight irrecoverably lost, promised no success; but with the best intentions have used their utmost endeavours.

If success has crowned their modes of practice, a lavish praise has been the consequence. If, on the contrary, partial sight has been acquired, it is not uncommon for the patient, and mankind in general, to depreciate the merit of such an attainment, because the operator had not performed impossibilities, and given a perfect restoration of sight.

When no success whatever has been consequent, then the operators have been grossly censured, as the cause of the blindness under which the patients labor, although the parties had been totally blind, perhaps, for years before their application.

This illiberal conduct in mankind has deterred many ingenious regular surgeons from attempting to practise, or make improvements in diseases of the eyes. Wisdom and sound policy ask, why should a medical reputation be

risked or injured in a humane, though less successful attempt to restore vision? Timidity will desert patients; the rash and ignorant boldly promise; but true science will declare the impossibility of determining, what will be the success in a doubtful case, use every judicious means, and, whether successful or not, will rest contented in having conscientiously discharged the important trust committed to its care and skill, with honor and integrity.

IV. *Macula arcuata*, seu *gerontoxon*, is a circular or semicircular opacity on the margin of the transparent cornea.

The center of the cornea remains pellucid; but from thence a little *discus* appears. The disorder is common to the aged, and has been called *arcus senilis*.

It is *caused* by a concretion of the pellucid vessels in old people, and is considered incurable.

While the affection does not extend into the direction of the pupil, sight is not much impeded; but if it should, blindness is the consequence.

To prevent its extension the *lotio penetrans* is the proper remedy, with which the eyes may be washed two, three, or four times a day.

V. *Cicatrix cornea*, seu *oule*, is an oblong spot
or

or scar, which succeeds an ulcer or wound of the cornea.

A wound of the cornea with a sharp instrument leaves little or no cicatrix, as may be seen in extracting the cataract.

Obtuse instruments, if they wound the cornea, and are accompanied with considerable suppuration, leave a visible cicatrix, which scarce ever vanishes.

Pterygium.

Pterygium is a membranous excrescence, which grows from the internal canthus chiefly, and expands itself over the albuginea and cornea towards the pupil.

The *proximate cause* appears to be an extension or prolongation of the fibres and vessels of the *caruncula lacrymalis*, or *membrana semilunaris*.

The *remote causes* are habitual inflammations, relaxations, or depositions of acrimony in these parts.

The species of pterygium are four :

1. *Pterygium tenue*, seu *ungula*, is a pellucid pellicle, thin, of a cineritious color, and un-painful; growing out from the *caruncula lacrymalis*, or *membrana semilunaris*.

It is cured by medicaments, or abscission.

The

The medicaments are a saturated solution of vitriol, lapis divinus, lapis infernalis, butyrum antimonii, spiritus nitri fumans, alumen ustum cum saccharo.

The cure requires the pterygium to be elevated by a forceps, and with a knife it is gradually to be cut off.

The *pterygium* which adheres merely by filaments, is easily separated; but when the accretion has extended to the cornea, is very difficult, because it cannot be raised.

II. *Pterygium crassum*, seu *pannus*, differs from the *ungula* by its thickness, red color, and fulness of the red vessels on the white of the eye, and it stretches over the cornea like fasciculi of vessels.

III. It is cured by the abscission of the nourishing vessels, which proceed from the internal canthus to the *pterygium*, by which the diseased part shrinks and vanishes.

2. By medicaments of the escharotic kind.

3. By the cutting of the pannus quite to the caruncle.

IV. *Pterygium malignum* is a pannus of various colors, painful, varicous, and arising from a cancerous acrimony.

The cure depends on the cure of the cancer, which seldom is obtained.

The only chance of a cure is to destroy the diseased parts cautiously and gradually by escharotics; but this commonly leaves an incurable corroding ulcer.

v. *Pterygium pingue*, seu *pinguicula*, is a mollicle like lard or fat, soft, without pain, and of a light yellow color; which commonly is situated in the external angle of the eye, and rarely extends to the cornea; but often remains through life.

It is an incysted tumor, and sometimes so connected with the *glandula lacrymalis* as to be hazardous to separate.

The cure must be by abscission, if it should spread itself on the cornea.

Staphyloma.

Staphyloma is a disease of the cornea, in which this membrane acquires a preternatural thickness and opacity in its substance*.

The *proximate cause* is an effusion of thick humor between the lamellæ of the cornea, so that the internal and external superficies of the cornea very much protuberates.

The *remote causes* are, an habitual ophthalmia, great contusion, and frequently a deposition of the variolous humor in the small pox.

* *Professor Richter* was the first who gave a true notion of this disease.

The species are :

Staphyloma totale, which occupies the whole transparent cornea; this is the most frequent species.

Symptoms—The opaque cornea protuberates, and if in the form of a cone increasing in magnitude, it pushes out and inverts the lower eyelid; and sometimes the morbid cornea is so elongated, as to lay on the cheek, causing friction and excoriation. The bulb of the eye being exposed to the air, fordes generate, the inferior palpebra is irritated by the cilia, and very painful red and small papillæ are observable.

The *cure*—An incipient or beginning staphyloma is sometimes cured by cold water used as a bath *, or by a solution of vitriol; but in cases of long standing the *butyrum antimonii* is the most decided remedy.

The eyelids being opened, and held firm, a fine pencil is to be dipped in the *butyrum antimonii*, or *spiritus nitri fumans*, and very carefully applied to the diseased, opaque cornea, every day, or every other day.

* Water made colder by being placed in a vessel surrounded with ice, or by a solution of sal ammoniac or nitre: water is rendered colder by surrounding the vessel containing it with the solution. As a cold bath, thus used, it is very efficacious.

If any of the caustical matter should spread, and occasion pain, the eye is to be immediately washed with warm water repeatedly, until the pungent pain, by the remedy occasioned, is no longer felt.

The *cure* of this disorder is extremely dubious; therefore expectations of patients or their friends should not be raised by injudicious promises *.

II. *Staphyloma racemosum* is a staphyloma formed by carnosus tubercles, about the size of a small pin's head.

It is *cured* in the same mode as the staphyloma simplex.

III. *Staphyloma partiale*, which occupies some part of the cornea: it exhibits an opaque tumor prominent from the cornea, similar to a small bluish grape.

It is removed by *butyrum antimonii*.

IV. *Staphyloma scleroticæ*, is a bluish tumor attached to some part of the sclerotica, but arising from the *tunica albuginea*.

The *cure* is similar to the foregoing.

* The *butyrum antimonii* was first tried by Janin, and afterward by Professor Richter, and both recommended it, as the most safe and efficacious remedy: I have used oftener the *spiritus nitri fumans*, which acts with the least pain imaginable, when carefully applied: both are very useful.

v. *Staphyloma pellucidum*, in which the cornea is not thickened or incrassated, but very much extended and pellucid*.

This disease is an incipient *hydrophthalmia*, and should be treated as such; but success very seldom crowns the best endeavours to cure it.

vi. *Staphyloma complicatum*, which is complicated with an ulcer, *ectropium*, caruncles, or any other disorder of the eye.

The cure must be attempted according to circumstances.

vii. *Staphyloma iridis*. For this species see *Ptoſis iridis*.

Onyx, called by the Latins *Unguis*.

Onyx is an abscess or collection of pus between the lamellæ of the cornea.

The diagnostic signs are, a white spot or speck, prominent, soft, and fluctuating.

The species are:

i. *Abscessus superficialis*, arising from inflammation, not dangerous, for it vanishes when the inflammation is resolved by the use of astringent *collyria*.

* It is called by some *ceratocèle*, seu *hernia corneæ*. Vide *Burgmanni* epistola de singulari tunicarum utriusque oculi expansione.

I have seen some few instances of this disorder; but in general they are incurable.

11. *Abscessus profundus*, or a deep abscess, which is deeper seated between the lamellæ of the cornea, sometimes breaking internally, and forming an *hypopyum*; when it opens externally, it leaves a fistula of the cornea; whenever the pus is exsiccated, there remains a *leucoma*.

The *cure* requires the resolution of the tumor before matter is formed; but this is seldom practicable; for being accompanied with an ophthalmia, the matter absolutely collects in the first or second stage of that complaint.

Solutions of borax are recommended, and I have used the *lotio penetrans*; but seldom could resolve the tumor; therefore the abscess in general requires opening with a knife to evacuate the pus, lest it extend, and cause an incurable blindness. The wound must be treated as an ulcer of the cornea.

Helcoma.

Helcoma is an ulcer in the external or internal superficies of the cornea.

The *causes* are, preceding inflammations, wounds, contusions, depositions of variolous, venereal, scrophulous, or morbillous matter, acrimony of the tears, trichiasis, &c.

It is known by an excavation and evacuation
or

or issuing of purulent matter from the cornea*.

The varieties are :

1. *Ulcus superficiale*, or a slight excoriation, which occupies the whole cornea, or is seated in the margin of the cornea, causing whiteness in the cornea, and redness in the conjunctiva.

It is cured by a solution of *lapis divinus*, or white vitriol dissolved in *albumine ovi*, and applied with a pencil to the cornea.

II. *Ulcus sordidum*, or a fordid ulcer, which is incrusted or foul.

The indications of cure are to deterge, incarn, and cicatrise the ulcer.

If a solution of borax or *lapis divinus* should not cleanse, it may be purified by a solution of *lapis infernalis* cautiously applied, or with *butyrum antimonii*; but what I esteem most for the purpose, is a weak solution of *mercurius corrosivus sublimatus* in water.

After the ulcer is thoroughly cleansed and incarned, which requires time, as the flow of tears impede the cure, it should be cicatrised by the *aqua vegeto-mineralis*.

* The ancient oculists gave a variety of names for the ulcer cornea, as *helcydrien*, a superficial ulcer; *coiloma* is an excavated ulcer; *eneagma* or *epicauma*, a fordid and smarting ulcer; *botryon*, an ulcer with caruncles; *argema*, a marginal ulcer. V. Mauchart.

III. *Ulcus fungosum*, from which carnosus papillæ arise.

The fungous papillæ are to be cut away, or destroyed with lapis infernalis, or what is safer, a solution of corrosive mercury.

Internal remedies, as purges and alteratives, are beneficial in these and all other ulcers *.

IV. *Ulcus venereum* requires mercurials externally and internally applied.

V. *Ulcus scrophulosum*, which affects the scrophulous; this can be cured by internal alteratives of the mineral class, and by the *lotio penetrans* externally.

Fistula Corneæ.

Fistula corneæ is a sinuous ulcer, or a purulent canal between the lamellæ of the cornea.

These fistulas take their direction either upward, downward, transversely, directly, inwardly, or tortuously.

The species are :

I. *Fistula penetrans*, which penetrates both superficies of the cornea.

It is known by sight, there being a perforation quite through the cornea, and an efflux of the aqueous humor, obscuration, corrugation,

* See the treatise on the ulcers of the legs, with their mode of cure without rest, &c.

a subsiding of the cornea, and a perpetual redness of the eye.

This fistula remaining long from the subsiding of the cornea and irritation, causes myofis, inflammation, and concretion of the iris with the cornea.

The *cure* is rarely acquired, if the perforation is in a direct line; the reason of which is obvious to every one skilled in the anatomy of the eye.

The purification of the penetrating fistulous ulcer may be attempted by solution of vitriol, or *lotio penetrans*, which latter may promote fresh granulations to fill up the lost excavated parts, if the fistula should be in an oblique direction.

The application should not be suffered to pass through the penetrating ulcer to the anterior chamber of the eye, lest it injure the iris, or crystalline humor. Afterward, mucilaginous lotions are proper, and lastly, the *aqua vegetomineralis*.

II. *Fistula non penetrans*, which does not pass through the internal superficies of the cornea.

It is known by the aqueous humor not flowing through the canal, and is perceived by ocular examination.

It is cured by enlarging the external opening, or destroying the sinus, then, to promote
the

the sanation of the ulcer, the *lotio penetrans* is proper, as it cleanses and incarns; lastly, gentle astringents are useful to obtain a cicatrix.

It must appear that fistulous ulcers, penetrating through the cornea, are generally incurable, or with great difficulty cured; but if not penetrating, they are, by skilful management, curable.

During the use of external applications to the ulcerated cornea, internal remedies and an exact regimen are necessary. To the plethoric, saline antiphlogistics of nitre, sal. prunella, &c.; to the debilitated, *tonics*; and where acrimony abounds, mineral alteratives.

Vulnus Corneæ.

Vulnus corneæ, or wound of the cornea, is a cut or puncture in the cornea,

The varieties are :

I. *Vulnus scissum*, or a wound made by a cut from a sharp instrument.

This is sometimes cured by nature in forty-eight hours, without any application, not even leaving scarcely any visible cicatrix, as happens after the operation for extracting the cataract. It requires the eyelids to be shut, bandage, rest and silence.

II. *Vulnus punctum* is a wound from the puncture of a needle or any sharp instrument, and the eye shrinks up.

This

But this is often cured to surprize, considering the fenfibility of the eye, in a day or two.

III. *Vulnus contusum*, a contufed wound. This always muft firft undergo fuppuration, to throw off the contufed parts : it then becomes an ulcer, and requires fimilar treatment, according to its magnitude and fymptoms.

IV. *Vulnus ruptum* or *Rhexis oculi*, a ruptured wound.

This arifes from an external rupture, contufion, hypopium, or hydrophthalmia, and generally the humors of the eye flow out, and an incurable blindnefs ever remains. See *Hypopium*.

V. *Vulnus complicatum*, with *prolapsus* of the iris, or vitreous humor.

These wounds are never, or very feldom cured, and always occafion a total and incurable blindnefs. See *Ptofis iridis*, and *Prolapsus humoris vitrei*.

Rutidofis.

Rutidofis is a corrugation and fubfiding of the cornea.

The fpecies are :

1. *Rutidofis* from a wound or puncture penetrating the cornea.

If not large or contufed, it heals without difficulty,

difficulty, and the aqueous humor is regenerated in twenty-four hours.

II. *Rutidosi*s from a fistula penetrating the cornea.

The palliative cure requires the application of some gold-beater's skin, to prevent the aqueous humor flowing constantly out; but the radical cure demands the cure of the fistula.

III. *Rutidosi*s from a deficiency of the aqueous humor, which happens from old age, fevers, great and continued evacuations, and in extreme dryness of the air.

It is cured, except in old age, by cordials, nutritious and humid diet.

IV. *Rutidosi*s of dead persons, when the aqueous humor exhales through the cornea, and no fresh humor is secreted; so that the cornea becomes obscure and collapsed. This is a most certain sign of death.

Pustulæ Corneæ.

Pustulæ of the cornea are vesicles full of pus in the external superficies of the cornea.

The species are :

I. *Pustulæ* from inflammation of the cornea, which often suppurate, and leave pustules in the cornea.

The vesicle being perforated or breaking, the
contained

contained matter is evacuated, and the cure is obtained by the *aqua vegetomineralis*, &c.

II. *Pustule* from a depofition of any acrimony, as the fmall pox, measles, &c.

They are cured by repeated purges, evacuating their contents, and exficcating collyriums. See *Ophthalmia variolofa*.

Phlyctenæ Corneæ.

Phlyctenæ corneæ are veficles full of water in the external fuperficies of the cornea*.

The fpecies are :

I. *Phlyctenæ fimples*, which neither are painful nor redden the margin of the cornea, and vanifh without leaving an ulcer.

The cure requires the incifion or excifion of the veficle, and drying collyria.

II. *Phlyctenæ acrimoniofæ*, which are painful, hot, and inflame the margin of the cornea.

The cure requires purging, or other remedies, according to the nature of the acrimony ; then exficcating lotions.

* *Phlyctenæ fimples* can be *hydatides corneæ*. *Phlyctenæ acrimoniofæ* ufed to be called *psyrdracia corneæ*.

Carunculæ Corneæ.

Carunculæ corneæ are small, soft, red papillæ in the external surface of the cornea*.

The *proximate cause* is a concretion of coagulable lymph into papillæ, the lymphatics of the part having lost the power of attracting and absorbing their fluid.

The species are :

I. *Carunculæ simplices*, which arise without any other morbid affection of the eye.

They are cured by any caustical application, as the *spiritus nitri fumans*, or the *butyrum antimonii*.

II. *Carunculæ complicatæ*, which are seated on a staphyloma or superficies of ulcers.

These excrescences are cured as the former species.

MOREI BULBI OCULARIS, *or Diseases of*
the BULB of the EYE.

Atrophia Bulbi.

Atrophia bulbi ocularis is a deficiency of the

* The learned *Richter* has dissected those caruncles, and found them to be true excrescences, or warts. I have perceived them to be hard tubercles, and, on excision, they have repeatedly regenerated. The ancients called these caruncles *spanastemata*, seu *rebelliones*.

requisite humors distending the globe of the eye.

The species are :

I. *Atrophia* from an efflux of the vitreous humor, as happens from wounds, or in extracting the cataract.

This species, in time, unless much has been evacuated, recovers itself.

II. *Atrophia purulenta*, or consumption of the globe of the eye, in which the vitreous humor becomes purulent, is consumed and absorbed.

This species is incurable.

III. *Atrophia acrimoniola*; from the dried scald head it has been known to arise, and has been cured by setons in the neck, or blisters behind the ears.

IV. *Atrophia* of the orbital adeps: in this species the eyes are so retracted in the orbit, that they appear almost concave.

The cure can only be effected by nutritious diet, and removing the obstructions, which are the causes of a consumption of the adeps, or its undue regeneration *. These are, in general, visceral obstructions of the mesentery, &c.

V. *Atrophia* from the evacuation of the humors of the eye.

* See Treatise on Diet, how nourishment is performed, &c.

If all the humors of the eye are evacuated by an *hypopium*, or wounds, then the bulb or globe contracts itself, is nearly flat, with total loss of vision. Children have been born with this species of blindness, in which incurable cases there is great reason to conclude that the eyes of the foetus have been inflamed violently, and then burst and evacuated the humors.

This requires an artificial eye in the adult; and, to prevent the lids from appearing disgusting in infants, perhaps this mode might be adopted with advantage.

Exophthalmia.

Exophthalmia is so great a swelling and protuberance of the globe of the eye, that the eyelids cannot be closed.

The species are :

I. *Exophthalmia inflammatoria*, which originates from an inflammation. See *Chemosis*.

II. *Exophthalmia purulenta*, which arises from a collection of pus within the globe of the eye. See *Hypopium*.

III. *Exophthalmia sanguinea*, which owes its origin to a congestion of blood within the globe of the eye.

In strangulation, in hard labors, in violent contusions, obstructed menses, vociferation,
the

thing probable should be attempted, nothing promised ; for the causes are in the highest degree dangerous, and the event very dubious or calamitous *.

Ophthalmoptosis.

Ophthalmoptosis is a prolapsus of the globe of the eye on the cheek, canthus, or upwards, the globe itself being scarce altered in magnitude †.

The cause is a relaxation of the muscles and ligamentous expansions of the globe of the eye.

The species are :

Ophthalmoptosis violenta, which is generated by a violent contusion or strong stroke, as happens sometimes in that manly English exercise called boxing.

The eye falls out of the socket on the cheek or canthus of the eye, and from the elongation

* I have known the *exophthalmia* to have happened from incautious mercurial unctions ; a great quantity of blood has been sent to the head, the salivary glands have enlarged to an enormous size, the returning veins have been compressed or obstructed : thus all parts of the head above the mouth have been exceedingly swelled, the eyes enlarged to the size of a hen's egg, from which bursting and blindness has ensued.

† The Greeks call this disease *Εκπιεσμος*, or *ptosis bulbi*.

and

and extension of the optic nerve occasions immediate blindness.

The cure requires the prompt reposition of the eye into its cavity.

Antiphlogistics, bleedings, and cathartics, are next to be prescribed.

Proper retaining bandage, and cold water should be frequently applied, if no violent inflammation succeed the misfortune; if there should, the treatment must be similar to the common ophthalmia until the resolution of the inflammation is obtained.

Afterwards corroborants and retaining bandage, with vitriolic lotions, are beneficial.

It is wonderful how these cases have been cured; not only the eye has become sound, but sight has been restored*.

II. *Ophthalmoptosis* from a tumor within the orbit.

An exostosis, tophs, abscess, encysted tumors, as *atheroma*, *hygroma*, or scirrhus, forming within the orbit, induration of the orbital adeps, may throw the bulb of the eye out of the socket upwards, downwards, or towards either canthus.

* Many recent instances prove this, as is observed by *Acrel* in his *Bemerkungen*. Similar facts have come under my own observation.

If neither evacuants nor antiphlogistics resolve inflammation or recent-forming abscess, nor mercurials or alteratives resolve the tophs or scirrhus, then an operation is necessary.

Incision, if possible, into the abscess, to evacuate its contents; but if this cannot be performed, excision, or cutting out the eye from the orbit, is the miserable but only probable cure of the scirrhus, toph, &c.*

This operation is dreadful; and I have known it to produce phrenitis, convulsions, and death; therefore it should not be rashly undertaken: it is inhuman, except under the greatest and most urgent necessity, to perform a dubious operation, in which the patient may be rendered more miserable by ill success, or perhaps deprived of life.

III. *Ophthalmoptosis paralytica*, or the paralytic ophthalmoptosis, which arises from a paralysis or palsy of the recti muscles; from hence a stronger power in the oblique muscles of the bulb.

The cure should be attempted by the lotio penetrans and *antiparalytic* remedies, already recommended in the palsy of the eyelid, &c.

The infusion of *arnica* has lately been much recommended by the celebrated *Collin*, not only

* *Memoires de l'Academie de Chirurgie*, Tom. V.

in palsies, but in epileptic and nervous cases. I depend entirely on the most penetrating *mineral alteratives* as cause-removing remedies *.

Ophthalmoptosis staphylomatica, when the staphyloma depresses the inferior eyelid, and extends on the cheek.

The cure requires the *butyrum antimonii*. See *Staphyloma*.

Carcinoma Bulbi.

Carcinoma bulbi is the degeneration of the bulb or globe of the eye into a cancer.

The *proximate cause* is a cancerous deposition to the tunics of the eye.

The species are :

1. *Carcinoma vulgare*. There first arises a pain in the globe of the sound eye ; then the vessels of the albuginea become varicous, filled with black blood, in appearance carneous, and vision is destroyed ; lastly, a most vehement

* Mr. Humpage, Member of the Corporation of Surgeons in London, cured an elderly woman of this disease, under my direction, who lives servant with the celebrated philosophical lecturer, Mr. Walker, George Street, Hanover Square. The eye was turned obliquely upwards, and the sight was totally lost, from a *gutta serena*. A course of *mineral alteratives* and the *lotio penetrans* cured this extraordinary disease. The eye has assumed its proper direction, and the woman has recovered her sight, which she now enjoys.

pain is excited, the whole globe of the eye is scirrhus, and appears like red flesh.

II. *Carcinoma fungosum*. This species begins with a fungous tubercle of the cornea or albuginea, which gradually occupies the whole superficies of the eye, and the bulb degenerates into a large painful fungus.

The *cure*. The incipient carcinoma, or cancer of the eye, should be treated with the remedies already recommended for the cancer of the lid, &c.

If the cancerous part is small, its destruction may be carefully attempted by the *spiritus nitri fumans*, or by a ligature; but if these methods are impracticable or unsuccessful, the extirpation of the globe of the eye is the only, but melancholy, remedy.

This operation, however, should not be performed, unless in the most urgent necessity, from the violence of the agonising pains, or for other important reasons, and particularly on the failure of all other remedies*.

The Extirpation of the cancerous Eye.

The *indication* is, that the cancer, which oc-

* *Memoires de l'Academie de Chirurgie*, Tom. V.

cupies a great part of the globe of the eye, requires the operation*.

The *contra-indication*. If the carcinoma is already inveterate, or arising from an internal cause, or if the bones of the orbit should be affected with a caries, then the operation will be fruitless.

The Instruments.

A dissecting knife of a convex or straight form.

A pair of scissars with blunt points, a little curved, similar to Daviel's.

Crooked needles with waxed threads.

For Dressings.

Pledgets of lint of various dimensions.

Compresses.

Bandage of rollers.

Agaric and spiritus terebinthinæ vel vini.

Situation of the Patient. The patient should

* Gendron has seen the globe of the eye in an *œdema conjunctivæ*, arising from a scrophulous cause, extend to the magnitude of a hen's egg. See *Gendron Traité des Maladies des Yeux*, à Paris, 1770.—I have seen in the course of these last twenty years several such instances, both from morbillous, variolous, venereal, and scrophulous diseases.

fit on a high chair towards the light, and the head should be held back by an assistant.

The operating surgeon stands before the patient.

1. The surgeon makes an incision with a straight knife on the junction of the external palpebra with the globe of the eye.

The assistant then raises the superior eyelid.

2. The *membrana conjunctiva* is then divided, which connects the superior eyelid with the globe of the eye, near the upper margin of the orbit.

3. The inferior eyelid being well depressed, the conjunctive membrane is to be cut through near the inferior orbital margin, and the bulb of the eye is to be separated from the inferior eyelid.

4. Then by the means of a crooked needle armed with a waxed thread, and passed through the anterior part of the eye, the globe of the eye may be drawn forth from its socket.

5. After the globe of the diseased eye is drawn externally, the fat and muscles are to be separated carefully from the orbit with a crooked knife or scissars.

6. After the separation of the bulb, the optic nerve is to be divided with a crooked knife or scissars, and the whole diseased bulb removed.

7. The surgeon then should carefully examine if there be more indurated or diseased parts remaining, that they may be likewise separated and removed.

8. The cavity of the orbit is then to be filled with lint, over which are to be applied proper compresses and bandage : the dressings are to remain three days.

9. Then the wound is to be digested and incased with yellow basilicon, linimentum Arcæi, or any other digestive ointment, until the orbit be sufficiently filled to admit the application of an artificial eye.

It is necessary to remark, that this operation may not succeed ; therefore it should rarely be attempted, until all other methods of cure have proved ineffectual.

Tetanus Oculi.

The *tetanus oculi* is a spasmodic and constant contraction of the muscles which move the orbit.

It is known by the immobility of the bulb or globe of the eye.

The species are :

1. *Tetanus* from a wound of the eye. When a needle or knife in the operation for the cataract is immersed into the eye, the bulb immediately

mediately becomes immoveable. This appears to be from a spasm of the muscles of the globe of the eye. This spasm or contraction remits, within a few minutes, spontaneously.

II. *Tetanus symptomaticus*, or the eyes fixed, which happen in some fevers and spasmodic diseases.

It is cured by antispasmodics and removing the exciting causes of the primary disease.

Nystagmus.

Nystagmus is an involuntary agitation of the ocular bulb.

It is known by the instability or involuntary and constant motion of the globe of the eye from one canthus to another, or in some other direction. Sometimes it is accompanied with an *hippus*, or an alternate and repeated dilatation and constriction of the pupil.

The species are :

I. *Nystagmus* from fear. This agitation is observed under the operation for the cataract; and it is checked by persuasion, and waiting a short space of time.

II. *Nystagmus* from sand or small gravel falling in the eye.

This is cured by the removal of the extraneous bodies.

III. *Nyf-*

III. *Nystagmus* from a catarrh, which is accompanied with a *gravedo*.

It is cured by removing *gravedo*.

IV. *Nystagmus* from *faburra* in the *primæ viæ*, as is observed in infants afflicted with worms, and is known by the signs of *faburra*.

It is cured by cathartics and anthelmintics.

V. *Nystagmus symptomaticus*, which happens in hysteric, epileptic, and sometimes in pregnancy, and is a common symptom accompanying St. Vitus's dance.

It is cured by antispasmodics, or by eradicating the primary cause.

Vulnus Sclerotica.

Vulnus sclerotica is an incision or puncture in the tunica albuginea and sclerotica of the eye.

The species are :

I. *Vulnus scissum*, or an incised wound, in which the vitreous humor or a part of it is evacuated.

The cure is effected by closing the eyelids of both eyes, and then applying compress and proper retaining bandage. In a few days the wound is, by these means, consolidated, as in the operation for extracting the cataract.

II. *Vulnus punctum*, as is made in the depression of the cataract. The vitreous humor is
rarely

rarely evacuated, and the wound in the cornea is soon cured ; but the conjunctive membrane suffers greatly from inflammation, unless the patient be well prepared by an antiphlogistic regimen, evacuants, and an extremely dry diet.

III. *Vulnus complicatum*, with a prolapsus of the vitreous humor ; such a wound is more tedious of cure. See prolapsus of the vitreous humor.

Defectus Oculi.

Defectus oculi is the want of one or both in the orbit.

I. *Defectus natus*. From what has been published by the relation of observers, for the most part, both eyes have been deficient*.

It is needless to remark, that art cannot supply the defect but by an artificial eye.

II. *Defectus adventitius*, which arises by fire arms, &c., by hypopium, or any accident.

In some instances one eye, in others both, are lost.

This deformity can only be remedied by an artificial eye. See the application of the artificial eye.

* *Act. Er. Lips. anni 1726. Mens. Mart. & Schenkii. lib. i. obs. 278.*

Oculus Supernumerarius.

Oculus supernumerarius is an increase of the usual number of eyes.

There have been instances of births with three or four eyes in one infant.

It is an extraordinary prodigy likewise when an eye is fixed in the chest, or the eyes take their seat in the thighs *.

Morbi Iridis, or Diseases of the Iris.

Mydriasis is too great a dilatation of the pupil, with or without a defect of vision †.

It is known by the pupil appearing always of the same latitude or size in the light.

The species of *mydriasis* are :

I. *Mydriasis amaurotica*, which, for the most part, but not always, accompanies an *amaurosis*. Rarely is this cured with the cure of the *amaurosis*.

II. *Mydriasis hydrocephalica*, which owes its origin to an *hydrocephalus internus*, or internal dropsey of the ventricles of the cerebrum : it is not uncommon amongst children, and is the most certain diagnostic of the disease.

This disorder is commonly incurable ; but

* *Schenck* speaks of both these cases in his *Observations*.

† See *Mauchart Dissert. de Mydriasi*.

as it arises from an effusion of water in the ventricles of the brain, its cure may be attempted by evacuating purgatives, antimonial sudorifics, blisters to the head or neck, and an extreme dry diet, that if the serum should be evacuated, a fresh or repeated accumulation should be prevented.

If no fever should attend the patient, chalybeates may be prescribed to strengthen the relaxed habit; for they perform wonders in other dropsies, evacuations having been premised.

III. *Mydriasis verminosa*, or a dilatation of the pupil from saburra and worms in the stomach or small intestines.

It is cured by *sal sodæ*, or other fixed alkalies, joined to purgatives, anthelmintics, &c.

The fixed alkaline salts dissolved, in a great measure, act on the mucus of both stomach and intestines, and occasion abrasions of the villous coat; therefore must be cautiously used, in doses to about ten or twelve grains, with jalap, rhubarb, *Æthiops mineral*, or cinnabar.

If there be an acid in the stomach, these salts are neutralised, and their qualities in deterging the saburra or mucus, or dislodging worms from their adhesions, are destroyed. Where they may be hazardous, they may be blended with oil of almonds and water, and thus converted into liquid sopors of various degrees of strength,

strength, according to circumstances and indications *.

IV. *Mydriasis a synechia*, or a dilatation of the pupil, with a concretion of the uvea with the capsula of the crystalline lens; for the treatment of which see *synechia*.

V. *Mydriasis paralytica*, or a dilated pupil from a paralysis of the orbicular fibres of the iris: it is observed in paralytic disorders, and from the application of narcotics to the eye.

It is cured, if curable, by electricity, volatiles, *arnica*, according to *Collin*, and by other antiparalytic remedies, which may be seen in the former part of this treatise.

VI. *Mydriasis spasmodica*, or from a spasm of the rectilineal fibres of the iris, as often happens in hysteric and spasmodic diseases.

The cure requires nervine and antispasmodic remedies †.

It should be remarked, that this species of a dilated pupil, which manifests itself in a fixed staring of the eyes, is not attended with danger, but commonly is removed by the termination of the hysteric paroxysm.

VII. *Mydriasis* from atonia of the iris, the

* See my Treatise on female and nervous Diseases, in the article *worms*.

† See *convulsions* and *spasms* in the same Treatise.

most frequent cause of which is a large cataract distending the pupil in its passing when extracted. It vanishes in a few days after the operation, in general : a pupil, however, long dilated, may remain so from the over and long-continued distention.

It is cured by attempting to contract the pupil by examination of lucid bodies, and contemplating with attention minute substances ; for these oblige the pupil, if in a contracting state, to contract from the irritation on the retina.

Myosis.

Myosis is a contraction or too small a perforation of the pupil *.

It is discovered by viewing the diameter of the pupil, which is smaller than usual, and remains so in an obscure place, where naturally, if not diseased, it dilates.

It occasions weak sight, or a vision that remains only a certain number of hours in the day ; but if wholly closed, total blindness.

The species of this disorder are :

1. *Myosis spasmodica*, which is observed in the hysteric, hypochondriac, and in other spasmodic or nervous affections : it arises from a spasm of the orbicular fibres of the iris.

* *Mauchart* Diff. de Pupillæ Phthisi, & Sinizi.

Antispasmodic remedies, tonics, mineral alteratives, &c., according to the nature of the case and constitution, are necessary in the cure.

II. *Myosis paralytica* arises in paralytic disorders; the cure may be attempted by the proper antiparalytic remedies and electricity*.

III. *Myosis inflammatoria*, which arises from an inflammation of the iris or uvea, as in the internal ophthalmia, hypopio, or wounded eye. To be treated strictly, as an inflammation, by bleeding, purging, antiphlogistics, and abstinence from liquids.

IV. *Myosis* from an accustomed contraction of the pupil. This frequently is experienced by those who contemplate very minute objects, by persons who write, by the workers of fine needle work, and by frequent attention to microscopical enquiries.

It is cured by abstaining from those causes, and by darkening the room, or by wearing a green silk shade.

V. *Myosis* from a defect of the aqueous humor, as in the *rhytidosis*. The restitution of the aqueous humor cures this disorder.

VI. *Myosis nativa*, with which infants are

* See treatment of the palsy in the Treatise on nervous Diseases, &c.

born. This requires a transverse incision of the iris. See *synizesis*.

VII. *Myosis naturalis* is a coarctation of the pupil by light, or from an intense examination of minutest objects. These coarctations of the pupil are temporary, and spontaneously vanish.

Synizesis.

Synizesis is a perfect concretion or coarctation of the pupil *.

It is known by the absence of the pupil and a total loss of vision.

The species are :

1. *Synizesis nativa*, with which infants are sometimes born. In this case, by an error in the first conformation of the pupil, there is no perforation. It is very rarely found †.

The cure consists in making an artificial pupil. This is effected by the surgeon making a transverse incision through the transparent cornea, and then through the part where the pupil should appear naturally, a little towards the nose, with a small incision knife for the purpose, such as *La Faye* or *Chefeldt* recommend ‡.

* *Weiffenbarn* Dissert. de Pupilla nimis coarctata vel clausa Erfordiae 1775, & *Janin*, l. c. p. 169.

† *Cl. Wriberg*. Dissert. de Membrana Pupillari factus in nov. comment. Goetting. Tom. II. p. 169.

‡ See *Band & Richter's Chirurg. Bibliothek*, 4 band. 1 St. 1. 192.

II. *Synizefis accidentalis*, a concretion of the pupil from an inflammation or exulceration of the uvea or iris, or from a defect of the aqueous or vitreous humor.

This species happens frequently after the depression or extraction of the cataract, and it requires an incision to form a new pupil, or to remove the capsula of the crystalline lens, which I have often seen remain after the operation of extraction in the cataract*.

III. *Synizefis* from a secession of the iris or cornea. From whatever cause it may happen, the effect is certain, for the pupil contracts its diameter; the longitudinal fibres, separated from the circle of the cornea, cannot resist the orbicular fibres: from hence the pupil is wholly or partially contracted†.

The cure. If the patient can see through the preternatural pupil, which I have often observed to be the case, there can be no necessity for any operation.

IV. *Synizefis complicata*, or that which is complicated with an amaurosis, synechia, or other ocular disease. The *amaurosis* or *gutta se-*

* I have cured two cases of the concreted pupil from inflammation by mineral alteratives in small doses, and by the lotio mercurialis penetrans externally applied, with friction on the lids against the cornea;

† See *Richter*, *Janin*, and others.

rena is known by the total absence of light to the retina; we can distinguish this not only by the pupil being closed, but likewise the eyelids: for whether the eyelids be open or shut, all is darkness to the patient. The other complicated cases are known by viewing the eye and considering the parts anatomically.

These cases are seldom, or with great difficulty, cured. Mineral alteratives internally taken, and the *lotio penetrans* externally used, in some few instances, under my own direction, have removed this disorder by a long perseverance in the remedies, when complicated with a partial cataract.

One case of a lady who had been totally blind near two years, and led about: on examination, I found the pupil nearly closed, and under it the chrystalline lens of a white color, and positively opaque.

I gave no hopes of cure; but was induced, from the lady's earnest solicitations, to attempt her relief. She was of a very delicate nervous and irritable habit, and her mind had greatly suffered from her misfortune.

I began with giving cambrarine preparations, with a small portion of nitre, and a solution of camphor.

Afterwards was added the eighth of a grain
of

of tartarum emeticum to each dose three times a day.

A dry diet was directed, that the remedies might have a less volume of fluids to act on, and that the contents of the vascular systems might be diminished.

In about nine or ten weeks some glimmering of light was perceived, and the power of the remedies was gradually increased; soon after this the lady could perceive the wood work in the frames of the windows, but was still led about by her daughter.

The remedies were continued, and the *lotio penetrans* applied externally, with friction three or four times a day.

In about four months the lady so far recovered her sight as to walk about her house, and soon after was able to write me a letter full of grateful acknowledgments.

The cause of the former blindness was now evident; for the pupil had adhered, I believe, to the capsula of the crystalline lens in a part which was opaque, and hindered the transmission of any light to the retina.

Two thirds of the crystalline lens being transparent, on the pupil becoming more open by the secession of the uvea from the opaque part of the crystalline lens, sight was restored.

The lady had unfortunately lost her other eye in infancy by a cataract complicated with a gutta serena.

About two or three years after the cure appeared confirmed, a dimness was coming on again; the *lotio penetrans* was applied externally, and one sixteenth of a grain of tartar emetic and the same quantity of *mercurius corrosivus sublimatus* were dissolved in a solution of camphor, and taken morning and evening with saffraas tea; the dimness was removed, and the lady could see to read, write, and work at her needle.

At different periods a dimness came on; but by the use of the mineral alteratives and the *lotio penetrans* it was repeatedly removed.

A similar case to the former was a Mr. Brooks, Diamond Merchant, in Rose Street, near New Street, Covent Garden.

This patient was about fifty years of age, and became blind of both eyes in a gradual manner. He was under the direction of that most ingenious anatomist, Mr. Sheldon, for a great length of time; and, after he had been led about blind near two years, the celebrated surgeon, Mr. Percival Pott, was consulted, who, perceiving a cataract complicated with the synizesis, or contracted pupil, considered the case as incurable,

rable, or very doubtful of cure; but was of opinion that the operation for the cataract might be performed.

The patient, who was very irritable in both mind and body, was extremely alarmed at the idea of an operation, and declined the advice of Mr. Pott.

Some time after he was led to me. I perceived a cataract with a contracted pupil in both eyes.

The length of time the disorder had remained gave very little hopes of recovering the sight; his expectations, therefore, were not raised by deluding promises: but he had been so animated by the cure of Mr. Hailes, whose case will next follow, that, at the patient's earnest solicitude, I determined to make some attempts.

With the *lotio penetrans* the globes of the eyes were washed three or four times a day, the eyelids were closed, and friction made on the eye, repeatedly applying the *lotio penetrans* until the vessels of the conjunctiva appeared red, or rather inflamed. This occasioned little or no pain, and the redness of the vessels disappeared in less than half an hour after each friction.

Internally I ordered,

Rx. Mercur. corrol. lub. gr. j.

Tart. emet. gr. ij. solve in

Aq. rofar. ℥viiij. deinde adde

Sal nitr. ℥ij. solve, f. miftura, de qua capiat ℥fs. exacte, in ℥iij. infuf. falfaf. prius agitata phiala.

A wooden fpoon was ufed, which meafured exactly half an ounce, as metal fpoons were improper, which a knowledge in chemistry muft immediately difcern the reafon of: they might attract fome of the diffolved particles of the compofition, caufe a precipitation, and change the medicine; or particles might have been attracted from fome metals without caufing a precipitation: therefore, whenever thefe, or other faline or mercurial folutions are taken, wooden or glafs veffels fhould be preferred to others.

The patient was ordered a very dry diet, forbid the ufe of vegetables and acids, while this preparation was ufed, left a diarrhœa might happen, and the intention of cure or remedy be defeated. It was ftrictly intended to act as a penetrating alterative, to remove obftruction in thofe moft minute parts of the iris, or relax the fpafm in the delicate fibres of its mufcles.

I had been convinced of the action of mineral alteratives thus given on the minuteft veffels
in

in a variety of obstinate diseases, wherein all other methods of cure were fruitless.

Mr. Brookes continued pursuing this plan of treatment for three months, but he still was led about totally blind. About the fifth month he began to perceive some glimmering of light, and a scorbutic scaly eruption, which had appeared for some time before his blindness, was entirely cured. The little appearance of amendment was a sufficient motive to persevere in the plan. The patient having much more faith and expectation of cure than I entertained, continued rigidly to his medicines and diet, and was actually restored to sight in about eight or nine months.

When he was restored to sight, I perceived that on one side of the crystalline lens was an opacity either in the *capsula* of the lens, or in the lens itself; but all the other part of the crystalline humor being transparent, and the contraction of the pupil removed, light passed through, and the patient could see to read and write many years before his death, which happened lately.

This Mr. Brookes was concerned in that Glass Manufactory, I believe, that is opposite Exeter Exchange in the Strand, where his nephew now carries on the business.

A third case of a similar nature was Mr. G.
Hailes,

Hailes, of Castle Street, Leicester Fields, who was totally blind from a cataract that partially rendered the crystalline lens opaque, joined with a contraction of the pupil and inflammation of the conjunctive membrane. The blindness had continued many months, and many practitioners, without success, had been consulted. The cure was conducted in the same manner, except that bleeding and laxatives were first prescribed to remove the opacity the inflammation of the conjunctive membrane occasioned. This patient has remained well many years, and sees to work at his business as a taylor; the partial opacity of the crystalline lens is still perceptible; the pupil, therefore, does not form an exact circle. What was unfortunate to this patient, he had lost the sight of his other eye in infancy.

Other cases might be adduced; some in which no success attended the methods; in others sight has been restored in this complicated disorder. Various acrimonies have given rise to this complaint, as the scrophulous, scorbutic, venereal, or rheumatic, in all which cases mineral alteratives bid the fairest to prove useful, and they frequently, by a long continuance, restore sight, after the failure of every other method. It should be remarked, that their doses should be regulated to the strength
of

of the patient, and then no evacuation will follow, either of pyrexia, vomiting, diarrhoea, or any other visible irritation.

v. *Synizesis spuria* is a closing of the pupil by mucus, pus, or grumous blood. If these bodies obturate, the pupil cannot be resolved by medicaments such as the foregoing: it requires that the cornea should be cut, that the little spoon invented by Daviel may remove the cause of the obturation.

Synechia

Is a concretion of the iris with the cornea, or with the capsula of the crystalline lens*.

The *proximate cause* is the contact from inflammation or adhesion of these parts, the consequence of inflammation.

The *remote causes* are, a collapsus of the cornea, a prolapsus of the iris, a swelling, or tumified cataract, hypopium, or a natural formation.

The species of this disorder are:

1. *Synechia anterior totalis*, or a concretion of the iris with the cornea. This species is known by every skilful anatomist inspecting the

* Mauchart Differt. de *Synechia*. — I have been consulted on many such cases, and after the death of patients, when I taught anatomy, I have demonstrated this disease.

parts. The pupil in this species is dilated or contracted, or it is found concreted; from hence various lesions of vision.

Radical cure requires the total removal of the synechia, so that the iris should be separated from the cornea with a knife or pointed probe. This separation, however, in concretions of long continuance, wherein the cornea and iris are uniformly united, would be rash and very dangerous.

In a recent instance the separation may be attempted in the following manner :

The Operation,

1. An incision is cautiously made in the cornea.

2. Then a probe, with a triangular or flattish, but pointed, end, is introduced through the incision.

3. The separation is then to be carefully attempted.

4. If this separation be impracticable, or cannot be easily performed, all violent attempts are to be avoided.

5. Great delicacy is necessary, besides an accurate anatomical knowledge of the parts and consequences.

II. *Synechia anterior partialis*, when only some
part

part of the iris is accreted. This concretion is observed in one or many places; from hence the pupil is variously disfigured, and an inordinate motion of the pupil is perceived*.

Cure. The surgeon makes an incision in the place common for the extraction of the cataract with the cataract knife, the point of which is to be steadily and carefully directed to the lower part of the adhesion of the iris, and to be pressed gently upwards. By this means the adhering part being separated, the parts of their own accord resume their proper situation towards the pupil, and the aqueous humor fills its proper space.

III. *Synechia anterior composita*, when not only the whole iris, but together a prolapsus of the crystalline lens, unite with the cornea.

It would be in general a rash undertaking to attempt the removal of this species, and nothing but the total blindness of both eyes could justify the attempt.

Nothing but the division of the concretion and the extraction of the crystalline lens could succeed, which is very dubious as to expectations of success.

The patient, therefore, should be apprised of the difficulty, as likewise in all other doubt-

* Janin, l. c. p.

ful operations of the eyes, that the art may not be unjustly reproached, which is too often the case in diseases of the eyes, where dubitable operations are performed.

IV. *Synechia posterior totalis*, or a concretion of the whole uvea with the ciliary processes and the capsula of the crystalline lens.

Little or no success is to be expected in this unfortunate case.

V. *Synechia posterior partialis*, when only some part of the capsula of the crystalline lens is concreted with the uvea and cornea. This accretion is simple, duplex, or triplex, or in many places it may happen.

The cure requires the incision through the cornea, and by the help of the pointed probe, a little bent, the uvea is to be pushed gently and separated, or pressed from the crystalline lens.

VI. *Synechia complicata*, with an amaurosis, cataract, mydriasis, myosis, or synizesis.

These complicated cases require a due consideration of the various diseases they are connected with, from which their probability or impossibility of cure will appear obvious to any skilful anatomist or oculist.

In the complication of the synechia with an amaurosis or gutta serena any relief scarce need
be

be expected; in the cataract no small difficulty appears; in the other instances the prospects of cure can only be expected from the stages of the diseases.

Ptoſis Iridis, or Prolapſus of the Iris,

Is a prolapius of the iris through a wound of the cornea.

It is known by a blackiſh tubercle, which promimates a little from the cornea in various forms *.

The ſpecies of the ptoſis of the iris are :

1. *Ptoſis recens*, or a recent ptoſis from a ſide wound of the cornea, as that which happens, though rarely, according to my own ex-

* All the more ancient authors uſed to call the ptoſis of the iris *ſtaphyloma*. See *Gunz* and *Mauchart* *Differtationes de Staphylomate*.

The prolapſus of the iris, according to the various magnitude which appeared, received various names :

Myocephalon, if the prolapſed particle referred to the figure and color of the head of a fly.

Staphyloma iridis, if the prominence ſeemed a little larger, or like to a grape ſtone.

Melon, if the ſize increaſed ſo as to protrude beyond the eyelids.

Hilon, or *clavus*, if the prominent part was callous or indurated; and ſimilar to the head of a nail.

perience,

perience, in or after the extraction of the cataract.

The cure requires that the iris should be replaced, by the small spoon, through the wound, or by the finger; the eyelids being closed, friction should be lightly used.

The dilatation of the wound of the cornea can scarcely be performed without danger of bursting the iris; if, however, practicable, the globe of the eye should be kept steady by the speculum I formerly invented for rendering the operation of the cataract more easy and safe.

II. *Ptoſis inveterata*, in which the incarcerated prolapsed iris is grown or attached to the wound or ulcer, and by the air has become callous or indurated.

This species cannot be replaced by the fingers.

It is generally incurable; but the prominent part may be touched every day or two with the *butyrum antimonii*.

The abscission and ligature of the prolapsus of the iris, for the most part, is either impracticable, or fails of success, though recommended by authors who perhaps never experienced the difficulties accompanying such attempts.

Vulnus Iridis, or a Wound of the Iris,

Is a solution of continuity of the iris by means of some instrument.

The species are :

1. *Vulnus transversale*, a transversal wound, which sometimes happens in the operation for the cataract : it rarely consolidates, but leaves the pupil in a preternatural shape.

II. *Vulnus longitudinale*, or a longitudinal wound. This made by art, as in the operation for the synizetis, or by accident, heals commonly in about fourteen days.

Pupillæ Deformitas, or Deformity of the Pupil,

Is a change of the round figure of the pupil into another form.

To this belong :

1. *Pupilla ovalis*, or an oval pupil. This form is sometimes natural and incurable: it does not occasion the loss of vision.

II. *Pupilla inferius ampliata*, or the lower part of the pupil widened, is a frequent symptom from the violent extension of the pupil in the extraction of the cataract. It disappears in about fourteen days.

III. *Pupilla rupta vel fissa*, a rupture or fissure of the pupil. This happens after the ex-

traction

traction of the cataract, and follows wounds and inflammations of the iris. This species is generally incurable.

Pupilla præternaturalis, or a preternatural Pupil,

Is a preternatural opening or fissure of the iris.

The species are :

I. *Pupilla præternaturalis*, from a transversal wound of the iris, which has been already mentioned in wounds of the iris.

II. *Pupilla præternaturalis*, from a secession of the iris from the cornea. Sometimes in one place, at other times in many places, the margin of the iris secedes from the cornea. These marginal diseases of the pupil are observed after violent falls, from contusions of the eye, from the hypopion, and from the inflammation of the iris. Sometimes, without any antecedent cause or symptom, except the synizesis of the pupil, or the myosis, this disorder remains. These secessions of the pupil are incurable.

Hippus

Is a repeated dilatation and alternate constriction of the pupil*.

* *Mauchart* Diff. de ulceribus Corneæ.

The *proximate cause* is an alternate convulsion of the orbicular and radiated fibres of the iris.

It arises from the same causes, and requires the same cure, as the convulsion of the bulb of the eye. See *nystagmus*.

Immobilitas Pupillæ, or Immobility of the Pupil,

Is a disorder of the pupil, in which it neither contracts in the light, nor dilates in the dark, but always preserves the same diameter.

The *proximate cause* is a paralysis of the orbicular and radiated fibres.

The species are :

1. *Immobilitas amaurotica*, or the amaurotic immobility which accompanies the amaurosis or gutta serena.

The cure is very doubtful : it is generally incurable.

The attempts to cure should be similar to that of the amaurosis or gutta serena, which, in some few instances, has been cured, particularly when recent, by the solution of mercurius corrosivus sublimatus, joined with tartarum emeticum, in small doses, from the sixteenth to the eighth of a grain of each dissolved, and taken in any vehicle with a little nitre.

The *lotio penetrans* should be used, with friction of the eyelids.

Fumigations of cinnabar to the canthus internus and nostrils.

By antimonials of the sulphureous class with mercurials, prepared and used as alteratives.

Arnica has been recommended; but I have never seen it attended with success.

II. *Immobilitas* from a disorder of the pupil, as the synechia, myosis, or synizesis. It is cured by the removal of the primary cause.

III. *Immobilitas* and dilatation of the pupil from the *hydrocephalus internus* of children, or watery head, when the fluid is contained in the ventricles of the brain; many cases of which I have opened after death. It is rarely curable.

IV. *Immobilitas idiopathica*. The causes of these are, for the most part, hidden.

The cure may be attempted by the foregoing remedies, by electricity, by purges, and saline remedies, in floridity, robustness, or plethora; by tonics, as the bark, in the debilitated, and by nervine remedies, according to circumstances*.

The *extractum pulsatillæ nigricantis*, liquor anodynus mineralis, with camphor rubbed on the eyelids and eyebrows, are recommended.

* See my Treatise on nervous, hysteric, convulsive Diseases, Apoplexy, Palsy, &c. &c.

MORBI HUMORIS AQUEI, or DISEASES OF THE AQUEOUS HUMOR.

Hydrophthalmia

Is a tumefaction of the bulb of the eye from too great a collection of the aqueous or vitreous humor*.

The *proximate cause* is too great an increment either in the chambers of the eye, or in the cells of the vitreous humor.

The aqueous and vitreous humor are regenerable: their over accumulation arises from an over secretion, and an abolition of the powers of the absorbent lymphatics of coagulable lymph, or serous sanguiferous venous inhaling vessels.

The termination of the disease is commonly unfortunate; for with blindness is added great pain from the protrusion of the tumor, if large, pressing out the eyelids, and occasioning their painful distension.

The species are:

1. *Hydrophthalmia* from an increment of the aqueous humor.

* *Manchart Dissert. de Hydrophthalmia, & Dissert. de paracenthesi Oculi.*

The signs are, a successive augmentation of the size of the globe of the eye, the cornea more than usual prominent, the iris deeper, the pupil immoveable, the vision from the beginning weaker, ophthalmodinia, hemicrania, and deprivation of sleep.

The *cure*. In the beginning it requires plentiful venæsection, if no contra-indication forbid; purges, blisters, mercurials, setons, and issues, according to circumstances.

Externally, discutient fomentations or warm vapors, cinnabarine fumigations, &c.

If medicaments should not produce a removal of the disease, an incision may be made through the cornea, as in extracting the cataract.

II. *Hydrophthalmia* from an increase of the vitreous humor.

It is distinguishable by an evident augment of the bulb of the eye from the posterior part, by hardness, the transparent cornea scarcely protruding, the iris convex, approximating to the cornea, dilatation of the pupil, an obtuse ophthalmodinia, gradually more vehement, strabismus or squinting, an abolition of sight, and hemicrania.

The cure is to be attempted by the same means as the former; but if medicines avail
not,

not, the only relief that can be obtained is by incision into the cornea behind the iris, by which means the fluid may be evacuated; but a total loss of vision is the consequence. This operation is dreadful, and if the tumor be large, the distended cornea will not contract, but makes a very ugly appearance.

III. *Hydrophthalmia composita*, in which both the aqueous and vitreous humor increase.

The cure, or rather the attempt, should be conducted as in the two former. If, however, the operation should not prove beneficial, some recommend the extirpation or cutting out the globe of the eye. This cruel practice should be postponed to the last extremity, and, unless pain be very urgent, or convulsions happen, should altogether be avoided, and not without the other eye is in danger*.

Hypopium

Is a collection of pus in the aqueous humor of the eye.

The *seat* is in the anterior or posterior chamber, or in both chambers of the eye.

The *proximate cause* is a preceding inflammation of the iris or uvea; an abscess or ulcer of

* See *Journal de Medicine*, Tom. XLV., and Cheslon's Pathological Inquiries.

the cornea, deposition of purulent matter, or puriform, in the chambers of the eye:

The *hypopium* is known by inspecting the eye: a white moveable liquid appears, occupying the chambers of the eye; the iris, partly or totally imperceptible, obscuring totally or partially the sight.

The *exitus*. Sometimes effused pus is absorbed or transudes through the pores of the cornea; in other instances it is so increased in the chambers of the eye as to rupture the cornea, and is thus discharged, but generally causing an incurable opacity of the cornea.

This has happened by the ignorant application of poultices to inflammations of the eyes, which frequently promote suppurations, and cause blindness. Sometimes part of the pus accretes, in appearance like a thick membrane, to the capsula of the crystalline lens, forming what is called the purulent cataract*. Sometimes a purulent cone adheres to the pupil, and destroys vision. See *synizesis spurious*.

The species of *hypopium* are:

1. *Hypopium inflammatorium*, or the inflam-

* *Mauchart* Dissert. de Hypopio, & Dissert. de empyesi Oculi; *Janin* l. c. p. 355; and *Richter's* Abhandl. von der Aufziehung des grauen Staars 1773, in capite de hypopio 172.

matory hypopium, which arises from a previous inflammation of the eye.

It is the worst species, which commonly leaves some other disease of the eye.

The cure requires the dissipation of the pus by absorption; if this should not happen, an incision must be made carefully through the cornea, that the pus may be evacuated.

The dissipation or dispersion may be attempted by venæsections, purges, discutient fomentations, or rather warm vapors, conveyed through a funnel to the eye. The decoctions may be mallows, with a solution of camphor, or of chamomile flowers, &c.

Some recommend *poultices* of apples, or other things; but such applications cannot reasonably be expected to operate in the discussion or resolution and resorption of matter under so thick a coat as the cornea. Warmth, however, is proper; but *poultices* often increase the suppuration, and render the disorder more dangerous.

The incision is made as in the extraction of the cataract. The wound should be kept open some few days; for the matter, from the thickness of the membrane and obliquity of the incision, is slowly discharged through the cornea.

It

It is a doubt with me whether the wound should not be made horizontally; but it must be small, or the crystalline lens, on the sudden discharge of the matter and aqueous humor, may likewise protrude and be discharged. This I saw happen by a rash surgeon of no inconsiderable reputation, who, though forewarned of the consequences, was so attached to the idea of making large openings to evacuate suppurated matter, that nothing but the unfortunate consequences could convince him of the error when the cornea required incision in an hypopium.

II. *Hypopium metastaticum*, which arises without any previous inflammation of the eye, and suddenly; but is induced by a fever.

This species is much easier cured than the former, by medicaments already recommended; and it transudes through the cornea, or is absorbed by the minute serous veins.

III. *Hypopium periodicum*, which recurs at certain regular periods*.

The cure requires, first, evacuation, then the cortex Peruvianus and vitriolic acid; or if obstinate, a solution of the vitriol album to a quarter or half a grain dissolved with the cort. Peruvianus†.

* Janin l. c. p. 360.

† For the certain use of white vitriol in intermittents and a dry diet, see my Treatise on nervous Diseases, &c.

IV. *Hypopium venereum*, which has arisen from an injudicious treatment of a gonorrhœa, or from accidents in venereal infection. It is cured as a chemosis, or venereal ophthalmia.

v. *Hypopium complicatum*, with a destruction of all the humors and internal membranes.

This requires an incision into the cornea, the evacuation of the suppurated matter and humors of the eye, and afterward the application of an artificial eye.

The Application of an artificial Eye.

It is a glassy or golden lamina, which imitates the figure and appearance of the eye, being accurately painted or enamelled, and applied within the eyelids, that the deformity or destruction of the eye should not be perceived.

The Indications.

1. If the bulb of the eye is cut out in the carcinoma, or destroyed by a bullet from fire arms, or other accidents.

2. If almost all the humors of the eye should have been evacuated by a wound of the cornea or sclerotica.

3. If the cornea be thoroughly opaque and deformed, as in an inveterate staphyloma.

4. If the bulb, from an hypopium, hydroph-
thalmia,

thalmia, or synchysis, should be emptied of its fluids, &c.

The Contra-indication.

An inflammation being present, or an exulceration, the fixing of the artificial eye is not to be attempted; but these symptoms must be first removed.

The artificial Eye.

The substances of which it is made is either glass or gold, painted and enamelled, so as to exactly imitate the other eye.

The *figure* of the artificial eye should correspond to the magnitude, convexity, and natural color, of the other eye.

The *glass* artificial eye is cheapest, but liable to be broken; nor is it easily adapted to the parts, or painted the exact color.

The *golden* artificial eye is expensive, but cannot be broken; can be better painted, and much easier adapted to the parts which are to receive it.

The Application of the artificial Eye.

1. After the artificial eye is completely made, the superior eyelid is to be elevated, and under this the artificial eye, moistened with

with a weak solution of gum arabic, is to be placed as carefully as possible.

2. Then the inferior eyelid is to be drawn a little outwardly, and the artificial eye is to be placed under the inferior eyelid, and fixed in its proper place.

3. If the remaining portion of the bulb is too little, then the concave part of the artificial eye being sufficiently filled with liquified bees wax, that may remain firmly seated on the remaining portion of the bulb of the eye.

In this case, however, the artificial eye is immoveable; whereas in the other instance it is moved by the bulb, and is scarcely discernible, except from a very minute inspection.

The artificial eye, therefore, is a very useful invention to hide lost vision, and likewise to cover a deformity, which is frequently very disagreeable to the unfortunate sufferer, as well as to susceptible and feeling beholders of the defect.

Hypœma

Is an effusion of cruor or red blood in the chambers of the eye.

It is known by inspecting the eye, in the chambers of which, instead of a pellucid fine humor, a redness appears. If much blood is effused, an opacity in vision is the consequence, and frequently blindness.

The

The species are :

I. *Hypoæma violentum*, which happens from a contusion of the eye, or a puncture of the iris in depressing the cataract.

The cure requires venæsection, evacuations, and discutient vapors.

If a coagulum of blood obstructs the pupil, and cannot be resolved by any of the foregoing modes, then an incision must be cautiously made, and the mass is to be extracted, or suffered to dissolve, which, by the admission of atmospheric air, soon happens. This my own experience confirms, especially in hot weather, or in a warm apartment.

II. *Hypoæma spontaneum*, which arises from violent coughs, vomitings, or strainings in hard labors.

The cure is the same as the prior.

Hypogala

Is a collection of white humor, like milk, in the chambers of the eye.

It is known by inspection of the eye, in which a white, moveable liquid appears.

The species are :

I. *Hypogala*, from a deposition of the milk, as is sometimes observed in women who suckle.

The

The cure requires evacuants, dry diet, and discutient vapors.

II. *Hypogala*, from the depression of the lachrymous cataract. The capsula of the cataract being wounded by the needle in depressing, a white humor flows, and, uniting with the aqueous humor, renders it turbid : hence defective vision.

When it does not spontaneously disappear, it must be evacuated by incision.

Turbiditas Humoris aquei, or Turbidity of the aqueous Humor,

Is an impellucidity of the aqueous humor of the eye, which appears turbid, and impedes vision.

The species are :

I. *Turbiditas mucosa*, or a mucous turbidity, which arises from a mucosity of the aqueous humor.

II. *Turbiditas*, from a fistula of the cornea, or ulcer in the internal superficies of the cornea, in which one or two drops of pus flows into the aqueous humor.

It is cured as the fistula of the cornea.

III. *Turbiditas*, from the crystalline lens liquifying into the aqueous humor, as happens after the depression of the cataract at the time of

of operation, or when a particle of the caseous cataract is observed to remain after the extraction.

It is cured slowly by evacuations, discutient fomentations, warm vapors, &c.

If the turbidness do not yield to these remedies, it must be evacuated by an incision through the cornea.

Effluvium of the aqueous Humor

Is an efflux of the aqueous humor from a wound or fistula of the cornea.

The species are :

1. *Effluvium*, or efflux from a wound of the cornea.

This efflux remains two or three days posterior to the extraction of the cataract; for, after this period, the wound in the transparent cornea being consolidated, the effluvium ceases. I have known instances in this operation, which I formerly performed on many subjects while I practised surgery, in which the wound in the cornea has healed by the first intention within the space of thirty-six or forty-eight hours. In the preparation of patients for undergoing the operation of extracting the cataract, after my new-invented mode, it is surprising how soon the wound healed, leaving scarcely any vestige of the cicatrix.

If

If the efflux of the aqueous humor remain beyond three days, it is a sign that the iris has protuberated through the wound, or the vitreous humor is evacuated, and that the lips of the wound being thrust out of a just apposition, they could not inosculate, nor is the wound consolidated.

The cure requires the healing of the wound, or its most perfect union; then the aqueous humor being soon regenerated, the cornea in its convex and fore part is perfectly filled.

If the prolapsus impede the cure, then it is to be treated as a prolapsus of the iris or vitreous humor.

II. *Effluvium*, or efflux from a fistula of the cornea.

The efflux is prevented palliatively, if to the fistula a pellicle or some fine gold-beater's skin be applied; but the radical cure requires the cure of the fistula. See *fistula of the cornea*.

ON THE
DISEASES
OF THE
CRYSTALLINE LENS.

Cataracta, or the Cataract.

THE cataract is a blindness, which arises from an opacity of the crystalline lens, or its capsula *.

The divisions of the cataract are very different in respect of seat, consistence, color, magnitude, maturity, of time, or complication, and origin.

In respect to the seat in which the opacity resides, the cataract is divided :

I. Into the *crystalline cataract*, when the lens itself is opaque. This species is the most frequent.

* By the ancient Latins the cataract was called *suffusio* ; by the Greeks *hypochyma* and *hypochysis*. See *Henkel*, *Gunz*, and *Albinus*, *de Suffusionis natura & sede*, & *Dissert. de Cataracta*, and many other authors.

II. The *capsulary cataract*, which some call membranous, when the anterior, posterior, or both parts of the capsula are rendered opaque.

III. The *crystalline capsulary cataract*, when the lens and its capsula are opaque.

IV. The *partial cataract*, when neither all the capsula nor lens, but the middle, the half, the margin, or any other part of the crystalline lens or capsula, labor under opacity, or cause partial obscuration of vision: from hence not full loss of sight or total blindness, but only a partial opacity, producing various obstructions of vision. See *hemeralopia* and *nyctalopia*.

V. The *spurious cataract*, which is a collection of pus appearing as a membrane: it adheres to the anterior superficies of the crystalline lens, and originates in a preceding *hypopyum*.

In respect of consistence, the cataract is divided into:

I. The *hard cataract*, when the crystalline lens acquires solid hardness greater than is natural: it is sometimes as hard as horn, or even, though rarely, as stone.

The *signs* of the hard cataract are, a contracted pupil scarce moveable, and the cataract distancing the uvea.

II. The *soft cataract*, which some call caseous or cheesy, when the cataract has the softness of cheese, and is nearly friable.

III. The *fluid cataract*, lacteous or milky, if the crystalline lens be found changed into a white humor resembling the cream of milk, or white pus.

The signs of the fluid and soft cataract are :

1. The amplitude of the pupil, and its slow contraction when applied to light.
2. When the cataract is so great that the edge of the *lens* scarcely can be seen in a dilated pupil.
3. The cataract appears near the *uvea*, but without the signs of concretion.

IV. The *fluid and hard cataract*, when the ambitus or circumference is milky or caseous, and the middle of the crystalline lens is hard. This can be referred to the cataract from the *humor Morgagnianus opacus*, with or without an opaque lens.

V. The *cystic cataract*, when all the capsula of the lens, in extracting the cataract, being emptied of fluid, opaque or pellucid, falls out of the eye spontaneously like hydatids.

In respect to color, the cataract is divided :

- I. Into the light *gray*, which imitates the color of pearls, and, in some instances, burnished iron.
- II. The *white cataract*, which has the color of milk ; often, but not always, this cataract is soft.

When

When the cataract is of a shining white color, then it is called *cataracta argentea*, or *argyras*.

III. The *glaucal cataract*, or of a gray color; but this is most rare.

IV. The *yellow cataract*, which, unless in old persons, is not very common; and it is commonly horney or hard*.

V. The *black cataract*, which imitates the color of wrought iron when unpolished or filed.

This is distinguished from an *amaurosis* by,

1. The black cataract appears turbid behind the pupil, which is not the case in the *amaurosis* or *gutta serena*.

2. The image of the person looking into the pupil can be perceived in the *gutta serena*, but not in the black cataract.

3. In the *gutta serena* or *amaurosis* the light cannot be distinguished from darkness; whereas

* This species of cataract I frequently have extracted, and it seemed, when out of the eye, in some instances, perfectly transparent, which, according to reason, seemed capable of transmitting the light. The philosophical professor, Mr. B. Martin, denied that this cataract could occasion blindness; but on my extracting some of these cataracts, and convincing him by demonstration of the fact of blindness being the consequence of the yellow crystalline lens, he gave up the argument. The rays of light seem confused and broken in this cataract from an irregular condensation of the lens.

in the *black cataract*, unless complicated with an *amaurosis*, light obliquely is perceived *.

VI. The *variegated cataract*, composed of many colors.

VII. The *striated cataract*, which seems starry, and is called *stellated* by some authors.

The color of cataracts, though some authors have said they determine their hardness, softness, or other conditions, I can, from my own experience, assert the contrary. They likewise, when extracted, appear of a color different to what they seemed in the eye behind the pupil.

The whitish colored are more generally milky or fluid cataracts; the pearl colored, or those resembling burnished iron, harder; and those of a yellow or saffron color commonly hardest of all, resembling a piece of yellowish horn, and similar in point of transparency.

These facts I have formerly, when I practised surgery, demonstrated by a large case of cataracts extracted from different subjects by the operation at the hospital I opened for this and other purposes †.

In

* *Janin* l. c. p. 243, gives two observations of the black cataract.

† In the years 1772 and 1773, thinking the London charities on too narrow a scale to prove serviceable to objects most destitute

In respect of magnitude, which the cataract bears, it is divided :

I. Into the *large*, which exceeds the natural size of the crystalline lens, as in some soft cataracts in which the capsula is much distended.

II. The *small*, which is smaller than the natural size of the crystalline lens, as in some hard cataracts, but not always.

The signs of the *great* and *small* cataract are similar to the soft and hard *.

In respect of maturity, cataracts are divided :

I. Into *perfect* or *mature*, in which the lens is perfectly opaque.

destitute of relief and friends, I endeavored to establish a kind of *Hotel Dieu*, or public charity for the reception of all objects indiscriminately, without any recommendation but disease and poverty. It was particularly intended for ulcerated legs and all species of blindness, for cancerous, scrophulous, and all other disorders ; in which the poor could attend as out-patients, and it was open every day from morning to night. I wished to determine by facts what would be the success of the new methods I had invented, and prosecuted with no small degree of ardor. There were seldom less than four or five hundred poor under care ; and though the charity was on too enlarged and liberal principles to succeed in this country, and failed with no small expence to myself, yet I was amply rewarded by a vast experience, which no other mode perhaps could have acquired. This hospital was opened in the neighbourhood of Bloomsbury.

* *Journal de Medicine*, Tom. XLV. *Richter's Chir. Bibliot.* 4 b. 2 ft. 253^f.

It is known if the patient be so deprived of sight as to only be able to discern light from darkness.

II. The *immature cataract*, or *imperfect*, in which the lens is not perfectly opaque.

This species is known by the lens not being perfectly obscured; colors and objects can be discerned, though not accurately.

Some *cataracts* become mature in a few weeks; but others never are perfectly formed, so as to totally obscure vision.

In regard to *time*, in which the cataract may be divided, are as follows:

I. Into the *recent*, which has remained or increased a short space of time.

II. The *inveterate*, which has remained many years.

III. The *secordary*, which arises or appears in the same eye again after depression or extraction.

The *secondary cataract* has recended after depression.

The *secondary cataract* has appeared after the extraction, from the remains of the posterior capsula of the crystalline lens, which has effectually obscured vision*.

* *Cel. Richter Fascic. ii. obs. chirurg. p. 88.* This I have frequently seen.

All these circumstances I have observed from experience : they likewise correspond with the observations of all those whose opportunities in practice have afforded a sufficient variety of cases to determine on the nature of cataracts.

The *complication* of cataracts requires a division :

I. Into the *simple*, which is without any other disorder of the eye or of the human body.

II. The *complicated* with an amaurosis or gutta serena.

The signs of which are, if the pupil be dilated and cannot contract, but is immoveable, and light cannot be distinguished from darkness.

If the preceding defective vision be accompanied without any lucid rays of light.

If the signs of the adhering cataract, or too large a cataract, should not be evident.

III. The *complicated cataract* with a dissolution of the vitreous humor, or with an opacity of this humor : neither *synchesis* nor *glaucoma* before the operation can be always known.

IV. The *complicated cataract* with a closed pupil. This is perceived by examining the eye.

V. The *complicated cataract* with adhesion. This has been called the *adhering cataract*, if the

the cryſtalline lens, either with the *uvea*, or with the vitreous humor, or with its proper capſula, ſhould be concreted.

The *ſigns* of an adhering cataract with the *uvea* are :

1. If the opacity be neareſt the pupil.
2. If the patient have no ſenſe of light.
3. If the pupil be oblique, altogether immoveable, unequal, or ſhould have little action.

The *ſigns* of a cataract adhering to its proper capſula are : if the capſula being cut, and the pupil dilated, the opaque lens is not excluded, neither *ſua ſponte*, nor by a ſtronger preſſure of the eye.

The *ſigns* of the lens being concreted with the vitreous humor are : if the lens being depreſſed repeatedly by the needle, the needle being elevated, the lens re-aſcends ; from hence it has been called *cataracta elatiica*.

VI. The cataract complicated with mobility, or tremor of the cryſtalline lens. Such a cataract is called *tremula*, or ſhaking, becauſe friction being uſed to the eye with the finger, the eye trembles.

With regard to original riſe, the cataract is divided into,

1. The *local cataract*, which is only an affection of the lens.

II. The *universal*, which arises from some acrimony of the whole body, as the scrophulous, venereal, ulcerous, arthritic, or scorbutic.

III. The *connate*, which appears after birth, or is born with man.

IV. The *hereditary*, which arises from an hereditary disposition.

The *disponent cause* of the cataract is either hereditary, which is rare, or a peculiar debility in the vessels of the crystalline lens.

The *proximate cause* is an obstruction or infarction of the vessels and cells which form the crystalline lens or its capsula, from an opaque humor which sometimes hardens the lens, but more generally renders it softer.

The *remote causes* are :

I. An *inflammation* of the capsula of the lens, or of the lens itself not resolved.

II. A *deposition* of arthritic or gouty, catarrhal, venereal, scrophulous, scaldy, scabious, herpetical, feverish, or ulcerous matter.

III. An *abuse* of spirituous liquors. I have known many dram drinkers afflicted with the cataract.

IV. The *vapor* of *aqua fortis*, by which the crystalline lens coagulates*.

V. Commotion or concussion of the brain.

* *Szen* Dissert. de Cataract. ab effluviis *aquæ fortis* orta. Jena, 1774.

VI. A wound of the eye.

VII. A percussio of the eye, by which the minute vessels of the lens seem deranged or debilitated.

VIII. A long-continued inspection of minute bodies, particularly of a splendid or luminous nature; from hence to writers and engravers the cataract is familiar.

IX. The splendid rays and heat of the sun, particularly in hot climates.

X. An hereditary or congenital indisposition.

XI. Senile age.

XII. The consent of one eye with the other. The cataract appearing in one eye is not unfrequently followed by a cataract of the other, unless a *metallic alterative* course be adopted, and long continued, with neutral salts; by which means I have cured many incipient cataracts, and prevented or cured an opacity in the second affected eye.

XIII. A burn of the eye has coagulated the lens, and rendered it opaque.

XIV. Extreme cold, or a fierce stream of cold wind on turning the corner of a street in winter, acting on the eyes, have condensed the crystalline humor, or its capsula, and produced the cataract*.

The

* I operated on the eyes of a man who was riding a full gallop on horseback in winter when the north-east wind blew

The Diagnosis of the Cataract.

1. An *incipient cataract* is known if the sight be cloudy, or similar to looking through smoke, the transparent cornea and aqueous humor being pellucid, without dilatation, contraction, or immobility of the pupil.

2. If, on examining the eye, the crystalline lens should appear a little cloudy or whitish.

3. If the cataract be complete, vision is impeded, the crystalline lens appears evidently discolored behind the pupil, of a turbid milk, pearl, or yellow horn-like color.

This is perceived immediately on examination by experienced surgeons who accurately understand the eye and its parts anatomically; without which few disorders of the eyes can be perfectly understood. A defective knowledge in the anatomy of the eye, and its diseases, has been productive of many errors, some of which have been disgraceful to surgery, and serious to the unfortunate sufferers from empirical audacity and ignorance.

The Prognostic of the Cataract.

1. The *cataract*, unless prevented from increasing, when incipient, by powerful internal

very bleak, and he became suddenly blind. I saw this patient a few weeks after the accident, and both cataracts were mature.

remedies

remedies and regimen, becomes a chronic disorder.

2. If the cataract be confirmed, and deprive the patient of vision, no cure, except by operation, need be expected; for the disorder, unless removed by extraction or deprefion, remains through life.

3. The cataract of one eye often produces the cataract of the other, unless patients will acquiesce in a long course of remedies, and observe a very strict regimen, or if the operation be not performed in a proper time.

This last doctrine is asserted by many authors of reputation; but I have observed the contrary in many instances; and there are several persons now living who have had the cataract in one eye ten or twelve years, which eye continues blind, while the other eye remains perfectly sound after the course of medicines I shall hereafter communicate.

4. It is said likewise by writers, that the performance of the operation in a proper time prevents the other being affected, which I absolutely deny, and consider it injudicious and extremely cruel to operate on one eye when the patient can see with the other; but it is the practice of itinerant oculists, who more consider their own emolument than the welfare of the patient.

The cure of the cataract may be attempted by three modes :

1. By medicines and regimen.
2. By the operation called *depression*.
3. By extraction.

Authors assert that the opacity of the crystalline lens can rarely be cured by medicines, which I know to be certainly true, if the disease be confirmed; but many cases have been cured of the recent or incipient cataract by internal medicines, a rigid diet, and the *lotio ophthalmica penetrans*.

The *aconitum*, the *pulsatilla nigricans*, *hyoscyamus albus*, combined with *mercurius dulcis*, have been extolled by some German writers; the whole of which practice seems to me rather empirical, except the *mercurius dulcis*, which remedy may be used on rational principles.

The rational internal treatment of the cataract requires a consideration of the actual cause of the opacity, whether it be in the cellular structure composing the *lens itself*, or the vascular and cellular structure of the capsula or fine membrane in which the *lens* is fixed.

From a variety of observations and experiments made by me, it evidently appears that there be two causes of opacity in the capsula or membrane.

- I. The *dilation* of its vessels, and the admission

mission of a grosser and opaquer fluid into the distended vessels than is natural. This occasions dimness, though not a perfect loss of vision; the patient seems to see through a cobweb or fine muslin.

II. The admission of a fluid into the cellular structure composing the capsula, by which the capsula is thickened, the fluid brought by the arteries not transuding, or not being absorbed by the venal system, an accumulation of fluid is deposited in the minute cells, and remains there stagnated, occasioning an opacity and discoloration in the membrane.

The mode of distinguishing both cases from the *gutta serena* is by the action remaining in the pupil, and the evident opacity in the crystalline lens, which humor in the *gutta serena* is perfectly clear behind the pupil, and in general the pupil is dilated, without the power of contraction in the strongest light, in the *gutta serena*.

The difficulty, therefore, of knowing whether the lens be opaque behind the anterior portion of the *capsula* must be evident to all reflecting anatomists; upon which principle it is necessary to try to cure the distension of the vessels in the capsula, or cells of the capsula, by all the methods recommended in the cure of the ophthalmia or inflammation of the eyes.

Evacuations,

Evacuations, abstinence, antiphlogistics, are first necessary.

These are to be prescribed if the disorder be recent.

Distension of vessels, or the cellular structure of the most minute pellucid vessels, or cellulæ, are the causes of opacity.

Diminution of fluids is the rational cure.

If all the *fluids* taken in the course of a day amount only to *half a pint*, except the laxatives, nitre, &c., taken as medicines, it will be a judicious and rational practice if the disorder be recent, and the fluids not inspissated either in these very minute vessels or cells.

The most penetrating antimonials and mercurials joined will be proper, such as enter the vascular structure of the periosteum, whether external or internal.

Mercurius corrosivus sublimatus and *tartarum emeticum*, joined in the dose of one sixteenth, eighth, sixth, or quarter of a grain each, dissolved and diluted in about three ounces of any antiphlogistic liquid, as *mistura salina*, nitre dissolved, or similar preparations, may be taken twice or thrice a day, according to cases, constitutions, circumstances of danger, or violence of symptoms, indications, and rational contra-indications.

No. 54. *R.* Merc. corros. sub.

Tart. emet. āā gr. j. vel ij. solve in

Aq. rosar. ℥viiij. cui adde

Pulv. falis nitri ʒij. f. mistura, de qua sumat

℥ss. exacte in ℥iiss. decocti nitrosi, mane &

nocte, vel ter de die.

Or,

No. 55. *R.* Pulv. antimonial. Pharmac. nov. Lond. ʒj.

Calomel. ppt. gr. v.

Pulv. camphor. Diss. conf. rosar. q. s. M.

accuratissime, & f. pilulæ No. xxx. qua-

rum sumat j. mane, meridie & horâ somni

superbibendo haustum sequentem.

Or,

No. 56. *R.* Sal. nitr. gr. x, xv., ʒj. vel ʒss.

Julep. e camphor. ʒij.

Sp. c. c. gtt. xx. f. haustus.

These are important plans of cure, adequate to the danger of the disease, the magnitude of the evil, and arising from a minute inquiry into its specific causes.

In slight cases, or in constitutions unable to bear either of the foregoing plans, with the most rigid *dry regimen*, Plummer's pill, the cinabarine preparations, *Æthiops*, and nitre, with solutions of camphor or volatile salts, will be eligible.

These methods of cure are the most efficacious, both when the crystalline lens and the capsula are recently affected.

If the cataract be confirmed, neither internal remedies nor external can answer any
curative

curative intention, which an anatomical consideration of the disorder will fully demonstrate; the accumulated fluids being coagulated in the *cellulæ*, the inhaling and exhaling minute vessels become impervious; in which case neither reliquifaction, resolution, nor absorption, can reasonably be expected.

The cataract being, however, a disorder of the minutest vascular or cellulous system, patience and perseverance many months are necessary; which, if unsuccessful, the patient is still but blind, and well prepared for the operation.

Neither the diminution of the enlarged vessels, nor the dislodgment of accumulated fluid in the *cellulæ*, can be rationally expected by any means, however skilfully prescribed, or cheerfully assented to by the patient, except by a long-continued, decided use of efficacious remedies.

In addition to the internal treatment, the *lotio penetrans* should be applied in the eye glass, warm, and frequently repeated as a resolvent fomentation.

These methods have cured many recent cases of the cataract under my own inspection.

The novelty, it is hoped, will be no objection; for mercurials and antimonials well pre-

pared, and thus joined in proper doses, will almost agree with every constitution.

Issues, setons, blisters to the neck and behind the ears, have been applied; though I am certain they have never cured the cataract, yet, as they cannot do injury, they may be occasionally used.

The vapor likewise of *spiritus salis ammoniacus* mixed with water may be useful; but then the *lotio penetrans* becomes useless, as the former would separate and precipitate the mercurial from the saline acid particles of the dissolved *mercurius corrosivus sublimatus*.

None of the medicines should be given so as to excite nausea or vomiting; for by this violent effort the returning blood being checked in the veins leading to the heart, the vessels of the face and membranes of the eye would become more turgid, the disorder would be increased, and all the rational intentions of cure by medicine and *rigid dry regimen* defeated.

Other preparations may likewise be used, as internal resolvents, such as the crude *sal armoniac*, *sal sodæ*, or the *vegetable alkali*, in small doses, so as not to abrade or dissolve the mucus of the stomach and intestines. In the application of these efficacious remedies considerable skill and experience is requisite in the prescriber, lest in endeavoring to remove a local, though

though serious, complaint, another more universal and injurious may be produced.

A more powerful alterative course is the junction of *turpeth mineral* and Kermes's *mineralis*, or *sulphur auratum antimonii*; of the former a third or fourth part, and the latter two thirds or three fourths, long rubbed together, at least twelve hours, and made into a subtile powder.

These and many other similar preparations have been formerly invented, and I have experienced their efficacy in various chronic complaints, as venereal, scrophulous, and cancerous; therefore pills of half or a whole grain of the foregoing powder, formed by any conserve, or *extractum liquoritiæ molle*, may be taken once, twice, or even thrice in the day, with a saline camphorated draught.

No. 57. R. Turpeth. mineral ʒj. vel ʒij.

Sulphur. aurat. antimon. vel Kerm. min.
ʒiij. vel ʒvj. tere simul in mortario vitreo
saltem per xii. horas, f. pulvis subtilissimus.

No. 58. R. Hujus pulveris gr. x, xv, vel xx.

Extract. liquorit. mollis q. s. f. pilulæ accuratissimæ divisæ No. xx. quarum sumat j.
mane, meridie, & nocte, vel mane & nocte,
superbibendo haustum sequentem.

No. 59. R. Camphor. gt. iij. ad vj.

Amygdal. decoct. No. ij. vel iv.

Sacchar. alb. ʒj. tere simul, deinde adde
gradatim Aq. pur. ʒij.

Sal. nitr. gr. x. ad ʒss. f. haustus.

It should be recollected, that this course is powerful, and requires skill and caution in its administration : very irritable and nervous patients can rarely bear mineral alteratives of this class ; but in stomachs well defended by a mucus they become exceedingly efficacious*.

If the incipient cataract be supposed to arise from laxity of vessels, or the *tela cellulosa*, the bark, elixir of vitriol, and other tonics, may be proper.

In the *venereal* or *scrophulous* cases the anti-venereal and antiscrophulous remedies are to be prescribed : in the *arthritic* cases, in which the cataract has appeared, the *aconitum*, with antimony, has been recommended ; but I have not experienced their efficacy, and am cautious about poisons exhibited as remedies, until they be clearly ascertained safe and useful.

On the Depression of the Cataract.

Before the operation for the cataract be attempted, the methods of treatment already recommended should be patiently tried many months, or even more than a year. I have seen many instances in which the penetrating altera-

* For more information on this subject, my Treatise on female, nervous, hysteric, bilious, convulsive, and apoplectic Diseases, or the Treatise on ulcerated Legs, may be consulted.

tives, with cinnabarine fumigations, have produced no sensible good effect for six or eight months, particularly in the colder seasons, and yet, after those periods, the cure of the *incipient cataract*, and even the *gutta serena*, has advanced rapidly.

No operation should be attempted unless the patient be so perfectly blind as to require leading; for the operation is at best precarious: no honest surgeon can be certain of success; he can only use rational, and sometimes unsuccessful, endeavors to remove the cataract.

I have used every means in my power to obtain an accurate estimate of the cure of the cataract by operations in most of the principal cities in *France, Holland, Italy, and Germany, &c., &c.*, but do not find these operations are more successful abroad than in this country. When I operated, according to the calculation I made, six or seven cases out of ten succeeded, even with the improved mode of preparation, and some advantages from the use of a new-invented *speculum oculi*, which acted on the tendinous and other parts of the muscles, instead of pressing the globe of the eye.

Other practitioners have had less success, and some affirm more. It is but just to apprise patients of the difficulties attending, and subsequent to the operation, to prevent unmerited

reproach to the operator, who, with the most consummate skill and dexterity, may fail of restoring vision. It is, therefore, unjust to censure the art of surgery for what may be impracticable, and much more so to villify or abuse the operator, who, with the most humane intentions and utmost skill, endeavors to rescue human beings from one of the greatest afflictions; for what can be more so than blindness to those who had formerly the happiness of vision?

It is necessary to observe, however, that many pretenders to these operations daily appear, absolutely ignorant of ocular disorders, and who, instead of rewards, deserve punishment for their rash, audacious promises, and for the many mischiefs that are the consequence of their alluring deceptions and barbarous imposture.

Such persons boldly have undertaken operations, and have removed from the reach of the credulous patients before the success or additional mischief of the operations have been ascertained.

The operation called *depression* is the removal of the cataract, with or without its capsula, by means of a proper needle, to the inferior part of the bulb of the eye*.

* Cel. Saintyves nouveau Traité des Maladies des Yeux.
Acrel Chirurgische Krankengeschichte & Cel. Henckel.

The history of the operation demonstrates its antiquity ; for it was known to *Galen*, and practised until the year 1745, when the celebrated *Daviel*, surgeon at Paris, invented the operation of extracting the cataract, by which the depression became in general neglected, until Mr. *Pott* and others favored this latter operation, because they could not, I believe, dexterously perform the former.

The Indication and Contra indication.

Every cataract may be depressed ; but if an *amaurosis*, or *glaucoma*, a *synchesis*, should be present, then both depression or extraction are in vain, or fruitlessly instituted.

Time of operation. In every time of the year the depression of the cataract may be performed ; but the spring, summer, and beginning of autumn, I consider most eligible.

The *chamber* for the operation should be sufficiently light, but, except one, all the windows should be closed.

The *preparation of the patient* should be by cooling and evacuating laxatives, antiphlogistics, a very dry diet, and the day before the operation venæsection should be performed, more or less, according to the strength of the patient.

In short, the fluids should be considerably diminished, in a manner similar to the treatment
of

of the ophthalmia, to prevent, if possible, succeeding inflammation.

The preparation of the apparatus is as follows :

The depressing needles.

Compress and rollers.

The situation of the patient. The patient should be placed in a low seat, in such a manner that the light may fall on the side upon the globe of the eye.

The situation of the surgeon. The surgeon should be placed in a higher seat than that on which the patient sits, so that the patient's head may be equal to the surgeon's chest, and to approach as nearly as possible.

The situation of the assistant. The assistant stands behind the seat of the patient, supporting with one hand the forehead, and with the other the chin, the patient's head being a little reclined, firmly pressing towards the assistant's breast.

The operation. If the operation, for instance, be performed on the left eye,

i. The right or healthful eye is to be closed, and firmly covered with compress bound on by a roller.

ii. The surgeon, with the thumb of his left hand and fore finger, opens thoroughly the eyelids,

lids, and holds the globe of the eye immovable. This may be done, perhaps, more securely by a *speculum oculi*, particularly to the timorous.

III. The patient is to be directed that he should turn his eye towards the nose, so that the external angle of the eye shall be openly exhibited to the operator, and a large part of the *albuginea*.

IV. Then the surgeon receives the depressing needle from an assistant between the thumb, fore and middle finger, in a manner similar to holding a writing pen, placing the remaining two fingers on the cheek, lest the hand should slip.

V. Lastly, the cataract needle is to be passed through the tunics of the eye, at about two lines distant from the margin of the transparent cornea, into the white of the eye, in a right line with the middle of the pupil.

VI. When the surgeon perceives, from the cessation of motion in the globe, that he has penetrated the tunics of the bulb of the eye, the flat side of the instrument is to be directed above the cataract, which, together with its capsula, is to be depressed below the pupil, and a little behind to the bottom of the vitreous humor, and retained there, that the cataract may be seated in the inferior part.

VII. If

VII. If the cataract should not follow the elevation of the couching needle, after depression, the operation is well performed: this is easily discoverable by examining the pupil.

The couching needle is then to be withdrawn again in a right line out of the eye; but if the cataract rise again, and follow the removal of the couching needle, then the depression ought to be again repeated.

VII. It is injurious to suffer the patient to examine objects immediately after the operation, or in the least to exercise vision; for this has been the cause of a reascension of the cataract, and inflammation of the internal tunics.

The dressing, after the operation is finished, should be a light compress dipped in weak vegeto-mineral water, which should be fixed on with a roller lightly, so as not to press much the bulb of the eye or eyelids.

Some recommend a cataplasm of the pulp of apple, which I object to, both because of its weight and pressure, and the injury I have commonly observed to follow the application of poultices.

It is necessary to cover both eyes with the bandage; for if one eye be left open, that moving would agitate and move the other.

The Regimen of the Patient.

I. After the proper bandage is fixed, the patient should be placed on a bed or sofa, with his head well supported by a pillow or two, so that it may be much more elevated than the inferior extremities; or he may be placed in an easy chair in almost an erect posture, rather inclining backwards; by which means the returning veins convey the blood easier to the external or internal jugulars, and to the vena cava: this should be observed for the first eight days.

II. Coughing, vomiting, sneezing, laughing, or speaking, as well as all difficulty in evacuating the alvine feces, should be avoided or prevented, and particularly the bending the head forward, backward, or sideways; for a non-observance of position has occasioned the re-ascension of the cataract.

III. A few hours after the operation a plentiful venæsection should be performed.

IV. In the evening of the first day a clyster of the laxative antiphlogistic kind may be prescribed, to facilitate the easy descent and evacuation of the feces.

No. 60. R. Decoct. commun. pro clystere ℥viij.

Sal. amar. cathart. ℥ss.

— nitr. ʒj. solve, deinde adde

Ol. olivar. opt. ʒij. f. enema, pro re nata
vel quotidie injiciendum.

v. The

v. The eye is to be lightly fomented for eight or ten days with a weak *aqua vegeto-mineralis*, warm, or the *lotio mucilaginosæ arabicæ*, twice in the day. While the eye is uncovered, during the time of dressing, the room should be darkened, so as only to leave sufficient light to make the necessary applications.

vi. The diet for the first ten or twelve days should be only *bread* and a *little water*. All fermenting or fermented liquors, as vinous, cerevisious, or spirituous, should be absolutely abstained from; for I have known a very *small error* in diet defeat the intentions of the operation, produce inflammation, and even suppuration of the humors of the eye.

vii. The medical treatment should be similar to the ophthalmia, or as rigid as in the *chemosis*. Not above half a pint or three quarters of a pint of liquid should be drank within twenty-four hours, and this should be water, or water with a little nitre, or with milk.

Nothing that is likely to create flatulence in the stomach should be used; therefore plain sea biscuits may be superior to household, but particularly to French bread.

All leguminous food is improper, as pease, beans, &c.; and even farinaceous had better be taken very sparingly for the first eight days.

Without this strict regimen the most dextrous operator

operator may fail in the removal of the cataract.

No. 61. *R.* Magnes. alb. *ʒ*iss.

Pulv. salis nitr. ʒiiss. M. f. pulvis, dividendus in octo partes, quarum capiat unam ter vel quater de die in coch. iij. aquæ puræ.

These powders will correct acid ferment, prove gently laxative, and in some constitutions diuretic; all which may tend to preserve the diminution of fluid, so necessary to prevent inflammation, and other ill consequences of the operation. The prescriptions for the ophthalmia may likewise become useful in various cases. In short, in so important an affair as the restoration of vision, unlimited power in the surgeon, and the most implicit obedience in the patient, are necessary, or the attempts, however skilfully directed, may end in disappointment.

VIII. After the tenth or twelfth day, if no accident should have happened, and the operation has well succeeded, the dressings and bandage may be omitted; but the eye should still be defended from the light by obscuring the chamber, and covering it with something lighter. After a few days the light may be gradually admitted, yet the eye should be covered with a green silk shade hanging from the forehead.

Lastly, if no bad symptoms forbid, the patient

tient is to be gradually admitted to more light, and a freer diet; but this should be regulated by reflecting on all the circumstances of the case, the rank and accustomed indulgences or exercises of the patient previous to the operation.

The Operations in particular Cataracts.

1. The *lacteous* or *milky cataract*. Sometimes in the operation of depression the capsula of the crystalline is wounded, and a turbid milky fluid flows and mixes with the anterior aqueous humor, so that the operator can neither see the point of the couching needle nor the pupil. This turbid fluid frequently in about seven or eight weeks vanishes by mutation, rarefaction, and absorption: if this should not happen, an incision is to be made through the transparent cornea, in the inferior part, with the extracting cataract knife, and the turbid humor will easily be evacuated.

It should be observed, that it is impossible to ascertain whether the operation has succeeded whilst the turbid humor remains; yet it would be hazardous to make the incision sooner in parts that are so sensible or irritable, and which have so lately suffered from operation.

2. The *caseous* or *cheesy cataract*, when some fragments remain or fall into the anterior chamber

ber of the eye. The remaining particles are also to be depressed by the needle; but, falling amongst the aqueous humor, they sometimes resolve and disappear in time; if not, they must be extracted through the transparent cornea.

In both the former instances, were it possible to foresee these cases, extraction should be preferred to depression.

3. The *cataract concreted with the uvea*. It is known by the inferior part of the iris wrinkling during the operation, and the superior seems depressed with the crystalline lens. The surgeon, in such an instance, ought, with the back of the couching instrument, to press and separate the uvea from the fore part of the cataract. If this cannot be accomplished with great gentleness, the surgeon should altogether desist from the operation, otherwise he will separate the iris from the limbus of the cornea. Extraction may be afterwards proper.

4. The *cataract concreted with its proper capsula*. Such a cataract is to be depressed with its capsula.

5. The *elastic cataract*, when the posterior superficies of the *capsula of the lens* is concreted with the *membrana hyaloidea*. If the depressed cataract should re-ascend immediately, the depression should be gently attempted three, four,

or fix times ; if it cannot be depressed, the surgeon is to introduce a fine sharp needle between the cataract and vitreous humor, separate the lens, and then depress it.

6. *The cataract of the anterior capsula.* It is proper to depress the cataract with the fore or hinder part of the obscured capsula, together with the lens itself ; but it sometimes happens that by incision or rupture of the capsula the lens is depressed without the capsula, leaving the original cause of blindness. *It is known* by viewing the pupil ; behind which, after the cataract is depressed, the anterior lamina of the capsula remains obscured ; likewise by the opaque appearance behind the pupil, and inconspicuity of the couching instrument behind the pupil.

The *cure* requires that the membrane thus impeding light should be scratched or perforated cautiously by the needle, and being dilacerated, should be depressed.

7. *The cataract of the posterior capsula.* The cataract being depressed, the couching needle is seen, but the cataract appears in form of a membranous opacity behind the pupil and couching instrument.

The *cure* requires the separation of the opaque capsula from the vitreous humor ; it is then to be depressed until it disappears.

8. The

8. The *native cataract*. This originates from birth. The cure of these cases is not to be attempted until the age of five or six years*.

9. The *cataract complicated with some universal affection*, as the scrophulous, venereal, or any other. In such instances issues or setons are recommended; but I recommend a long-continued use of mineral alteratives in scrophula, antivenereals in venereal acrimony, and antiscorbutics in scurvy, and mild cinnabarine correctors, evacuants, or tonics, according to constitution and circumstances.

10. The *secondary cataract*. The cataract being depressed, after a few hours, days, months, or years, may re-appear by the re-ascension of the lens, and occasion a new blindness, but not always, for sometimes it spontaneously descends again.

If it should not redescend, it requires repeated

* I extracted the cataracts of a boy about five years old in Thames Street, near twenty years ago; the one cataract was horny, the other milky. The former succeeded, the latter failed. The young gentleman I saw lately, who sees as well as persons in general who undergo this operation. What is to be remarked, the child could find his way, when blind, by feeling about the house, knew every thing by the touch; but when he saw, he knew not the figure of any one thing by sight, and was obliged to relearn the names of every thing by the touch and sight conjointly. This proves the mind has no original impressions, but receives all it comprehends by the organs of external sense.

depression, or perhaps, what is safer and more successful, extraction.

The supervening Symptoms common to Depression.

1. *An ecchymosis of the albuginea.* This sometimes happens in the external place the needle perforates. This symptom is rarely of any consequence, and is commonly discussed by a mild collyrium, such as the *aqua vegeto-mineralis*, or *lotio mucilaginosæ arabicæ*.

2. *Hypoœma*, or cruor effused in the chambers of the eye, by which the aqueous humor appears totally red.

This evil is more grievous, but is frequently dissipated by venæsection, or a mutation of the component parts of the fluid; as happens in contusions where discolored blood, contained in the cellular structure of the *tela cellulosa*, becomes more dissolved, and lastly is absorbed.

3. *Inflammation of the eye.* This is less to be dreaded than when the cataract is extracted, and is rarely violent, when the preparation of the patient and regimen already directed be strictly observed.

It should be treated by antiphlogistic cathartics, and similar to the ophthalmia, by nitre, dry diet, vesicatories, &c.

Authors recommend cataplasms, cephalic fomentations, &c.; but depletion, the prevention
of

of repletion, and the application of the *lotio mucilaginosæ arabicæ*, are the most rational modes of treating this inflammation.

4. *An efflux of the aqueous humor*, by which the transparent cornea sinks. There is little to fear from this symptom, as the aqueous humor soon regenerates, and fills the concavity of the cornea, by which it reassumes its external globular form.

5. *Vomiting* sometimes happens soon after the operation, or on the first night, which spontaneously ceases. This symptom, however, is very disagreeable; for by the impetus of vomiting the depressed cataract rises again: hence if ever this symptom be dreaded, some antiemetic is necessary, as the common or volatile saline draught; or if there be no contra-indication, a few drops of laudanum may be added, and a little simple cinnamon water.

6. *Prolapsus of the cataract* through the iris into the anterior chamber of the eye. This requires the incision of the transparent cornea, and the extraction of the lens.

7. *Myosis and synizesis*. The affections of the inflamed uvea or injured iris are to be treated as already directed under their respective articles, to which the operator is referred.

8. *The injured or wounded iris*. Wounds of

the iris, if longitudinal, are not very dangerous, if the inflammation can be subdued.

9. *Hypopyum*. This follows, for the most part, an inflamed uvea or iris, from hence portends evil; in most instances, closeness of the pupil and blindness are the consequence.

10. *Myopia* and *amblyopia*, which happen whether the cataract be depressed or extracted; from which a more weak and defective vision from a defect of the lens. In these cases double convex glasses are necessary, the focus of which is of five or six inches.

The depression of the different species of the cataract has been fully explained, and will be well comprehended by every surgeon conversant in the precise anatomy of the eye, and its various coats, membranes, and humors. It only remains to be observed, the operation itself is so doubtful, that no surgeon of honor, experience, and integrity, however skilful, can promise a certainty of success. The impediments to a restoration of vision by depression have been all considered, the accidents attendant or subsequent to the operation have all been delineated: rational methods of preventing or removing the disastrous circumstances of the operation have been fully prescribed, both dietetical and medical. Whatever may be the events in practice, whether fortunate or unfortunate, the patient

should be satisfied his attempt to regain vision was resolute and laudable; and the surgeon should be happy in reflecting on his skilful administration of all that was rational and likely to prove beneficial. In the treatment of this truly deplorable calamity, the cataract, we may deserve, but cannot always command success.

The Extraction of the Cataract

Is the removing the opaque crystalline lens through an incision made in the inferior part of the transparent cornea.

Indication. Every species of cataract can be extracted.

Contra-indication. If the cataract should be accompanied with an *amaurosis*, *glaucoma*, or *synchesis*, the operation is cruel and useless.

For the most part, the operation is infelicitous, if the patient labor under an *ophthalmia*, *hemikrania*, or any vitiated acrimonious degeneracy of the fluids, or is of a very irritable habit of body or mind, or if the cataract be concreted with the uvea or vitreous humor.

The *depression* of the cataract is to be preferred to the *extraction*.

1. If the patient labor under a nictation, winking, or convulsive motion of the eyelids or bulb of the eye.

2. If the globe of the eye be deeply seated in the orbit.

3. If the cornea be too flat, so that the space between the transparent cornea and iris be so small as to render the operation not only difficult, but dangerous, as in the *brespitis*.

4. In infants, whose heads or eyes cannot be preserved quiet during the operation.

The time for the operation. Every time of the year the extraction may be performed, according to the opinion of authors ; but certainly spring and autumn are to be preferred. In the winter the room must be kept warm ; in the summer it should be moderately cooled. Every probability of cold should be avoided ; for a catarrh, sneezing, or coughing, might defeat the attempts of the best operator. At the times in which epidemic diseases reign, either in the spring or autumn, it is not prudent to operate ; but as this mostly depends on climate or local situations, to their consideration the surgeon is referred.

The place for the operation. The same as in the depression ; the darker the room in which the surgeon can see to operate the better. I could see to operate in what many others considered a very obscure light, to which I attribute some cause of that success I experienced.

The surgeon's mind should be perfectly calm
and

and determined; it should not be embarrassed by any accident arising in the operation, but be serenely prepared for the worst that may happen.

The Preparation of the Instruments, or Apparatus.

1. Some recommend the digital, with the *hasta* of *Rumpelt*.
2. The cataract knife, in which every operator differs.
3. The cystic knife, a little curved, of M. *La Faye*.
4. The needle, for the extortion of the crystalline capsula with the lens, of *Richter*.
5. The little spoon of M. *La Faye*.
6. The curved scissors of *Daviel*, for dilating the wound in the cornea, if necessary.
7. The instrument for separating the iris from the concreted capsula.

These are the principal instruments recommended by authors; but they are too complex, and the major part useless.

The instruments with which I have extracted the cataract formerly, in numerous instances, are :

1. A *speculum*, which acts on the muscles of the eye, presses on the bones of the orbit, without pressing the globe, and does not squeeze out the vitreous humor.

2. A *cataract knife* of such a construction as
to

to be sufficiently strong to pierce the cornea, and leave a wound easily cicatrised.

These are all the instruments * I ever used in the extraction of the cataract.

If there be a necessity of separating the capsula from the iris or lens, the point of this knife, directed by a sharp eye and steady hand, will answer every purpose. Dexterity in operating can only be acquired by practice, after first well knowing what the operator has to expect or contend with.

Bandages, &c. Compresses of fine linen or lint must be ready.

Double-headed rollers, first to bind down the sound eye; secondly, after the operation, to bind on both, to prevent muscular action. A *fine handkerchief*, however, well applied, may answer every purpose of rollers.

The situation of the patient. The patient should be seated upon a pillow on the floor, so that the head rises above the knees of the surgeon, the light falling externally towards the nose.

The *operator* may be seated on a chair, so as to receive the patient's neck or head between his knees.

* These instruments are made by *Evans* at the Old Change, and other surgeon's instrument makers.

One assistant sits behind the patient, and with his hands supports the chin, upper and back part of the patient's head towards his chest, so that the face of the patient reclines backward, approaching as much as possible towards an horizontal position. If the patient should be very timid, the hands must be secured by one or two assistants; but this is rarely necessary. Another assistant should hold the instruments, or they may be placed on a table ready, which latter method I always found most convenient, either on the right or left side, according to the eye which required the operation.

The Operation.

I. If the operation should be performed on the left eye, then the right eye is to be bound firmly with compress. This had best be done before the apparatus appears, to prevent terror.

II. The fore finger is then to be applied to the upper lid, and the thumb to the lower, of the operator's right hand, across the nose, steadying the remaining fingers and hand on the left temple and cheek of the patient, and the upper and lower lids are to be separated.

III. The operator having at the same time the *speculum oculi* in his left hand, the spring of which is to be pressed between the finger and thumb, the upper and lower curved part of the instrument

instrument is to be placed the one on the upper, the other on the lower eyelid, and by gentle pressure between the globe and the bones of the orbit the eye comes forward; the instrument then is to be suffered to distend to its utmost limits, by which the globe protrudes, the semicircular curves press on the bones of the orbit, and by pressing these curves deeper, between the globe and the orbit of the eye, the globe becomes, in general, immoveable, and fair for the incision.

The same effect is produced by the finger and thumb of the operator, which some prefer; but I consider the *speculum* safest and least objectionable, especially the *speculum oculi* I recommend.

iv. The *operator* then takes the cataract knife, in the manner of a writing pen, between his thumb and fore and middle fingers of his right hand, resting his other fingers and hand on the temple and cheek of the patient, and his elbow on the middle of his own thigh, by which he will steadily perform the incision.

v. Then directing the point of the cataract knife to nearly the external margin of the transparent cornea, after resting until the globe of the eye be well steadied by the *speculum*, or by the finger and thumb of the left hand, the point of the knife is to be forced through the
cornea

cornea externally, in a direction horizontally, and in a line rather below the lower margin of the dilated pupil.

VI. The flat sides of the knife, being between the iris and transparent cornea, is to be passed across and through the other side of the cornea, keeping clear of the iris and the direction of the pupil, lest the future cicatrix should impede vision.

In this part of the operation the aqueous humor is evacuated, and often the opaque crystalline lens.

VII. The point of the knife is then to be cautiously and steadily directed to the cataract, the capsula of which should be perforated lightly in a circular direction, according to the magnitude of the dilated pupil, upon which the opaque crystalline lens passes forcibly through the pupil, and, as the knife is withdrawn through the external wound of the transparent cornea, sometimes on the cheek, if a hard or horny cataract.

This is the general mode of operating, after the manner I pursued formerly, in which it may be observed that the apparatus and directions of operating are greatly abridged, if compared with the modes adopted or recommended by M. *Daviel* and other operators, who seem to direct some particulars that are impracticable, others

others useless, and, lastly, they prepare for events, and prepare to obviate difficulties, which, I must confess, have never happened in actual practice.

The Difference between my Mode and other Operators.

I. In the common manner, the patient is seated in a chair lower and opposite to the surgeon.

II. The operator depends on the finger and thumb to keep the eyelids open, which I am certain is not so secure as the dilated speculum.

III. The first incision is similar.

IV. Then a cystitonus, or a cystic knife, is passed through the wound of the cornea and pupil by other operators, which I performed with the cataract knife first introduced.

V. The cornea being incised, the capsula of the lens, according to some, is not to be opened, but the *acus occulta*, or the concealed needle of *Richter*, is to be fixed into the middle of the lens, and by a gentle rotatory motion it is to be loosened, and with its capsula extracted; or *David's* little curved spoon may be used for the same purpose*.

* This practice has been successful in removing a secondary cataract, from the capsula remaining and becoming opaque.

VI. The cataract being extracted, some recommend the purification of the eye, and removal of fragments by *Daviel's* little spoon. This is next to impracticable, and I have never seen it necessary; for the wound of the cornea being in a depending part, if any fragments remain, they will, in general, issue through the wound of the transparent cornea, when the patient is erect, and by gentle pressure of the upper part of the cornea.

The method of operating mentioned was what I first practised; but repeated operations convinced me, that frequently the crystalline lens would force itself through the pupil and wound of the cornea, leaving the capsula behind, which, during the operation, was not always perceptible; this capsula remaining, if adhering to the uvea or pupil, caused blindness: thus the operation proved fruitless, and was obliged to be repeated to remove the capsula.

In the mode of operating adopted, I never recollect seeing any part of the vitreous humor evacuated; but then it should be observed, the *speculum oculi* I used did not press on the globe of the eye, but distended its semicircles, and all its forceable pressure was on the bones of the orbit, and their tendinous, adipose, or muscular coverings.

I likewise seated the patient in a chair, and
fat

fat opposite to him, as is commonly practised by other operators ; but I soon found the inconveniency of this mode.

After this I invented a much better situation for the patient, in which the crySTALLINE remained in its place till I chose to extract it, even after an ample incision of the transparent cornea. This not only prevented the improper and too precipitate protrusion of the lens, but the vitreous humor from being evacuated.

The new Manner of seating the Patient.

A chair, with a pillow on it, is placed so that the light may fall proper for the operation.

The patient is seated upon a pillow on the floor, and leans his head back on the pillow placed on the chair, so that his face is strictly horizontal. The operator seats himself before the patient, and, leaning forward, performs the operation as before directed.

The advantages of operating in this manner are :

I. The head being fixed on the chair, or by the patient lying on the back at full length on a couch, the aqueous humor is but partially and slowly evacuated after the incision through the transparent cornea.

II. The

II. The crystalline lens preserves its seat, unless a convulsive motion of the muscles should happen.

III. The crystalline lens is less likely to burst the capsula, and thus leave a future cause of blindness.

IV. If the crystalline capsula should adhere either to the uvea, or any other part constituting the pupil, the separation is with much greater facility and safety accomplished, whether by the cornea knife or any other instrument.

V. There is less apprehension of the vitreous humor being evacuated, for its own gravity preserves its natural situation.

VI. There can arise but one objection, which is, the crystalline lens remaining in *situ* even after its capsula is pierced; but by gently raising the head, after the operation is dextrously performed, the cataract spontaneously passes forward through the wound of the cornea, if made of a proper magnitude.

The bandages necessary and regimen in the extraction should be similar to that recommended in the depression *.

In

* I always prepared the patient a week or two before the operation, by a very spare diet, evacuates, and antiphlogistics, by which the inflammation was moderate after extrac-

In performing these operations it is necessary that the surgeon be ambidexter : he should use both hands equally with steadiness and dexterity ; he should have clear vision, and be perfectly master of the anatomy of the eye, and the morbid affections of all its parts. This knowledge can be only acquired by much study and practical experience. Surgeons of skill and probity will neither undertake nor promise success in any operation of this nature, but will have

tion. I was led into this very strict regimen by accident. At the hospital a man presented himself with the cataract in both eyes quite mature for operation, which had become so from the first month of the attack, originally occasioned by a sharp bleak winter wind. I operated on both eyes the same day ; the ingenious Mr. *Falconar* was then a dissecting pupil in my house, and assisted conjointly with Mr. *Walkey*, now in *Rathbone Place*, at the operation. The man was a pauper ; and a woman who led him to the hospital undertook his care, for which she daily received money. The woman inhumanly locked the poor man up, with nothing but a little water and bread, for four or five days, persuading him it was by my order. On the seventh day, as he did not come to the hospital, I inquired after him, and was informed he was nearly starved. On examining his eyes, I found the operation had happily succeeded without any subsequent inflammation : the cicatrices in the cornea were scarcely perceptible ; and I must declare I never knew any former operation attended with such little pain, so few inconveniencies, or such happy effects. This induced me to pursue a regimen which chance first acquainted me with, and which appears rational in all inflammatory disorders of the eyes, and other parts, whether arising from colds, &c., or from the violence received in membranes, so irritable, from operations.

forefight

forefight of future events; nor will honorable men operate on any other principle than the absolute necessity of attempting rationally to restore vision; while imposters promise much, operate rashly, and add fresh misery to the truly miserable, by exciting unreasonable expectations, which have terminated unfortunately in many well-known instances.

The special or particular Operations in the Cataract.

1. *The milky cataract.* This cataract, with its whole capsula, should be extracted; therefore, after the evacuation of the turbid milky humor, the empty capsula is to be removed by the cystitonus, or the concealed needle*, if the capsula should not adhere to the adjacent parts; but at all events it must be extracted, or the operation is useless.

2. *The caseous or cheesy cataract.* The fragments of this cataract are commonly discharged through the wound of the cornea; if not, *Daviel's* little spoon may be used for the purpose, which is rarely necessary. The capsula, however, is to be removed.

3. *The cataract concreted with the uvea.* The

* The one I have used passes through a very small flattened canula, and is bearded like an arrow, which, being carefully applied, extracts the capsula.

pointed probe with an inflected point is to be introduced between the uvea and lens, and the separation is to be carefully attempted.

4. *The cataract concreted with its proper capsula.* This is to be extracted with its capsula by the knife or concealed needle; but in general, on elevating the patient's head, the cataract with its capsula falls into the anterior chamber through the pupil, and from thence through the wound of the cornea, if this last be not too small.

5. *The elastic cataract, or the cataract concreted with the vitreous humor.* The separation is to be attempted by means of the concealed needle, which passes through a very small canula; the point of the canula being passed through the wounded cornea, pupil, and crystalline lens, the point of the bearded needle is to be pushed through the canula, and the membrane is to be enveloped by turning the point of the needle round, and then withdrawing it into the canula, so that the beard of the needle may not fasten on the margin of the pupil, and drag it forward with the diseased membrane or cataract.

If the separation should not succeed, then the capsula is to be cut, and the lens alone extracted.

It has been known that the posterior part of
the

the capsula has shrunk, particularly after being punctured, and retreated in such a manner as not to impede vision after the operation.

6. *The cataract united to the anterior or posterior capsula.* This species of cataract requires separation from the vitreous humor; if this be impracticable, the remaining capsula must be cut away by repeated dissections.

7. *The secondary cataract.* After the operation, in a few days the capsula, in a state of opacity, appears. This sometimes disappears by evacuations, fomentations, and antiphlogistics, in a short time.

If these fail, more powerful remedies are to be prescribed; if these succeed not, then, at some future time, the operation is to be repeated, and the opaque lamella is to be destroyed.

8. *The cataract with the pupil contracted.* If before the operation the pupil should have been closed and immoveable, and if on the incision through the cornea it becomes not dilated, then the operator, after waiting a little time, is to boldly cut through the pupil, and extract the cataract.

The Accidents attendant on the Extraction of the Cataract.

1. *The incision between the lamellæ of the cornea.* If the point of the knife should be intro-

T 3 duced

duced obliquely, sometimes it runs between the *lamellæ* of the cornea: this happens to young inexperienced operators, who have not practically experienced the resistance of the cornea to the knife.

When this happens, it is injurious, for it leaves an incurable opacity. The remedy in the operation is, to pass the point of the knife more perpendicularly, then it passes into the anterior chamber of the eye.

2. *Too small a wound of the cornea.* If the wound in the cornea be not sufficiently large, and cut proportionably to the size of the crystalline lens, the cataract remains incarcerated. In this case authors recommend dilating the wound with scissars, which I consider and know to be a dangerous practice, for scissars make a contused as well as an incised wound, and such wounds seldom heal by the first intention, which, in this operation, is, above all things, desirable; therefore the incision should be enlarged with the knife.

The small wound never happens except to timid or unskilful operators, and such men should never attempt this operation. There are often insurmountable difficulties experienced by the most judicious operators; it is therefore not difficult to perceive the dangers arising from either the rash or fearful.

The

The defect in making the first incision sufficiently large has defeated all the intentions of the operation.

3. *The collapsing of the cornea under incision.* This is mentioned by authors, but I have never seen it happen in considerable practice; in this case, it is said, the iris may be wounded, from the sudden efflux of all the aqueous humor.

In such instances it is recommended to abstain from finishing the operation for a few days, and then to dilate the wound in the cornea.

If such an accident happen, it must arise from slowness in the operation, or some embarrassment; for when the cornea is cut rapidly, and the knife is passed through with spirit, no collapse, I believe, is the consequence, which abundance of experience formerly justifies me to assert.

4. *Wound or injury of the iris.* This is known by inspection, or by an efflux of blood from the iris.

5. *A prolapsus of the iris.* This happens, though very rarely, whilst the operation is performing, from external pressure of the finger and thumb, or from a tetanus of the bulb. The iris is to be replaced. See *ptosis of the iris*.

6. *Prolapsus of the vitreous humor.* This happens either from external pressure or a tetanus of the muscles of the bulb, or by an ill-formed *speculum oculi* pressing on the globe of the eye, which is a defect in that commonly used, but is remedied by the *speculum* which I invented as an improvement on the common *speculum*. The spring part is made to fully expand the two semicircles, without the slider to regulate it, as formerly, to the size of the globe.

A moderate or small portion of the vitreous humor protruding and falling out does not injure, but sharpens vision. See *prolapsus of the vitreous humor*.

7. *The premature elapsus, or falling out of the crystalline lens.* This is no uncommon thing in the operation, and, according to the common methods of operating, it is feared, lest the iris and vitreous humor follow. This generally arises from external pressure, or a spasm of the muscles of the bulb, and in general is prevented by avoiding the pressure of the finger and thumb and use of the common *speculum oculi*.

8. *Sternutation, or sneezing.* This is an unfortunate circumstance during the operation; for the lens and all the vitreous humor, by this violent effort, have fallen out. To prevent these mischiefs, the eye is to be covered quickly with

with a comprefs of lint or linen over the lid, and retained by the fingers.

9. *The cataract complicated with the gutta serena or amaurosis.* If the patient have no figns of light, unlefs it evidently arifes from an adhefion of the capfula of the opaque lens with the furrounding pupil or its component parts, the *cataract* is complicated with a *gutta serena*.

The operation, under fuch a circumftance, fhould never be performed, for it cannot prove fuccefsful, and nothing but ignorance, barbarity, or selfishnefs, could induce any operator to undertake to extract the *cataract* complicated with the *amaurosis*.

10. *The cataract complicated with the synchefis, or a diffolution of the vitreous humor.* After the extraction of the *cataract* the vitreous humor flows out attenuated, and the patient ever remains blind with a finking of the eye.

11. *The cataract complicated with a glaucoma, or an opacity of the vitreous humor.* The *cataract* being removed, the vitreous humor appears opaque, and the patient for ever muft remain blind.

Great fkill is neceffary to diftinguifh this from an opacity of the pofterior part of the capfula of the cryftalline.

12. *The cataract complicated with a total contraction*

traction of the pupil. If after the first incision the pupil contracts, it is impossible to perforate the capsula of the lens: in this case the room should be darkened, and the operator should wait until the pupil dilates itself. If the pupil have been long contracted, a cautious incision is to be made through its internal edge; but this is a very precarious operation, and does not always answer the ends proposed. In such cases the surgeon's attempt to relieve, though it may fail, yet it is highly justifiable.

The following Symptoms happen after the Operation.

1. *The wounded cornea not healing.* In this operation the cornea generally is healed in a few days. If, however, the wounded lips should not inosculate by the first intention, which can seldom happen, unless the cornea knife be ill constructed, or the operation unskilfully performed, the consequence is the oozing out of the aqueous humor, and often a prolapsus of the iris and vitreous humor*,

2. *A visible cicatrix.* A wound of the cornea

* I have seen instances where the patient, previous to the operation, has been well prepared by the methods recommended in this work, in which the wound in the cornea has healed in twenty four hours, leaving a cicatrix finer than a hair. This depends likewise on making the incision skilfully.

made with an acute knife leaves scarcely any remains of the cicatrix, and what remains, if the incision be skilfully made out of the direction of the pupil, vision is not impeded.

There may, however, be another cause for a cicatrix not healing by the first intention: this is the dilating of the wound by scissars, as recommended by authors, by which the lips of the wound are contused, a small suppuration is the consequence, and the parts divided are longer before they can inosculate, and the cicatrix, of course, will be broader and more opaque.

3. *Ophthalmia*. This may happen at any time soon after the operation, but, according to some writers, most commonly about the seventh day. This is generally discussed by antiphlogistic remedies.

If the *ophthalmia* be intermittent or chronical, the treatment may be referred to those circumstances. See *ophthalmia*.

4. *Efflux of the aqueous humor after the third day from the operation*, at which time it should cease: it is a sign that the iris or vitreous humor are incarcerated in the wound.

5. *Prolapsus of the vitreous humor*. This has been already considered to arise from accident; (see *prolapsus of the vitreous humor*) but if it
happen

happen a few hours after the operation, opiates are necessary.

6. *Prolapsus of the iris.* This has happened on the first or second day after the operation. It should be cautiously replaced by the obtuse point of a probe; but requires great caution and gentleness.

7. *The deformed pupil* is a frequent symptom after extracting the cataract, and, if not impeding sight, of little consequence.

8. *A fissure of the pupil*, from a transverse lesion of the iris during the operation: it cannot be cured by art.

9. *Myosis, synizesis, and synechia.* These originate from an inflammation of the iris and uvea. See the treatment under those titles.

10. *Turbidness of the vitreous humor.* Sometimes this happens from fragments remaining of the cheesy or caseous cataract, which, dissolving in the aqueous humor, vanishes in a few weeks.

11. *Obscuration of the cornea.* This symptom arises from inflammation, which being removed, the cornea becomes transparent.

12. *Blepharophthalmia.* This affection arises from contusion of the eyelids, or relaxing cataplasms. It is easily cured by tonics.

13. *Hypo-*

13. *Hypopyum*, is the effect of internal affection, which see under its proper head.

14. *A convulsion of the muscles of the bulb*. This arises from mental affection, or from too much light, and it often presses out the iris or vitreous humor through the cornea. It requires gentle compression and antispasmodics, particularly opium, if no contra-indication appear.

15. *Amblyopia*. From the defect of the crystalline lens this arises; requiring convex spectacles to answer the loss of the convex lens.

16. *A wasting or tabes of the eye*. From an efflux of the humors this arises, and is frequently regenerated when the wound in the cornea is healed. See *tabes bulbi*.

17. *Trichiasis*. When under cure, the cilia or eyelashes turn inwardly and inflame the bulb. The introverted eyelashes are to be extracted by short forceps, if they do not take their proper direction.

The Prolapsus or Protrusion of the Crystalline Lens,

Is the falling out of the crystalline lens from its capsula into the anterior chamber of the eye.

The species are :

1. *A prolapsing of the lens without a wound of the cornea*.

The

The *proximate cause* is a rupture of the capsula of the crystalline lens. This often happens under the depression of the cataract ; from a motion of the head, from the leaping down from a high place, from a percussion of the eye, from a pressure of the bulb.

The diagnosis and effects. It can be seen ; but it produces sometimes inflammation of the eye, pain, and a contraction of the pupil ; at other times, except impeding vision, no other symptom.

The *cure* requires the incision of the cornea equally large as in extraction.

2. *Prolapsus of the lens with a wound of the cornea.* This may originate in an accidental wound, or under operation, in extracting the cataract, especially if the bulb of the eye be pressed by the fingers or an ill-constructed speculum.

In this treatise on the cataract are delivered not only what has occurred from my own experience when I formerly practised surgery, and particularly this operation, but likewise the observations of all other operators or writers who have communicated their knowledge with a laudable intention of benefiting society. There are many obstacles to surmount, many opposing circumstances to combat, many which were
formerly

formerly thought insuperable conquered. It only remains to ardently endeavor to improve the present state of knowledge, and surgery will soon arrive at greater certainty in this operation, which has too long been neglected by those who adorn the profession in many other respects.

As the description of instruments is difficult, and as my experience has convinced me of many defects in their former construction, I shall be ready at all times to shew the instruments recommended, and give every intelligence in my power to improve the treatment of the very susceptible and delicate organ of vision, though I never more may undertake operations, having many years declined the practice of surgery : but there are skilful surgeons in town who well comprehend my modes of operation, &c.

The

*The DISEASES of the VITREOUS HUMOR.**Glaucoma.*

The *glaucoma* is an opacity or an impediment of the rays of light through the vitreous humor.

It is known from the blindness of the patient by a circular opaque vision or obscurity which is observable behind the crystalline lens*.

The *proximate cause* is a deposition of opaque humor in the cells of the vitreous humor. It is a disorder rarely happening, difficult to be perceived, and generally incurable.

The species are :

1. *Glaucoma opacum*, in which the vitreous humor, as in the soft cataract, is impellucid.

In this disorder, when recent, the vapor arising from the volatile ammoniacal spirit, or salt and hot water, is to be applied through a funnel up the nostrils, and to the eye.

* *Heisteri Tractatio de Cataracta, Glaucomate, & Amaurosi*, Altorf, 1720. This was the disorder of that excellent painter, Sir Joshua Reynolds, President of the Royal Academy, by whom I was consulted in conjunction with Sir George Baker, President of our Royal College.

Internally,

Internally, the *extractum pulsatillæ nigricantis*, *cicutæ*, and *hyoscyami albi*; *aconitum* with *millepedes*, are recommended, *cum mercurio dulci*; also *infus. arnicæ*. These remedies, except the mercury, appear very dubious and empirical.

Fumigations of cinnabar, nitre and camphor internally, the *lotio penetrans*, and all the remedies recommended in the recent cataract, seem rationally designed to promote the change of the opaque fluid in the cells, and its absorption.

It is justifiable to attempt every rational means of cure : mercurials and antimonials may be given in obstructed cases ; bark and tonics in the debilitated, with mercury ; bleedings, saline purges, and penetrating antiphlogistics, in plethoric, florid, muscular, and robust habits.

It must be confessed, however, that the disorder is seldom curable, particularly in adults.

II. *Glaucoma terreum*, when the vitreous humor becomes a concrete, earthy substance, which authors on dissection have discovered, and which I have once seen.

This is positively incurable ; for the concreted substance cannot be liquified, nor the obstructed vessels of the cellular structure rendered pervious for the office of absorption ; nor can the arterial minute system be acted on by the most penetrating mercurials or antimo-

U

nials,

nials, so as to dislodge the fluid which stagnates in their minute extremities. All methods of resolution may be attempted, but all methods may prove fruitless.

III. *Glaucoma purulentum*, is a change of the vitreous humor into purulent pus, or analogous to pus or suppurated matter.

This is generally incurable ; but what is most to be dreaded, the disorder being communicated to the sound eye.

Authors recommend the extirpation of the eye, which is too cruel : an incision may be made through the opaque part of the cornea behind the posterior chamber of the eye, and the pus may thus be evacuated.

Synchysis,

Is a solution of the vitreous humor into a fine attenuated aqueous fluid.

The *remote or proximate causes* are not well comprehended ; sometimes it accompanies an amaurosis, at others a cataract*.

It is known by a perfect blindness ; in which the blackness of the pupil is rendered so pale, that the whole internal superficies of the retina and its red vessels can be clearly seen.

* It has been supposed, by *Richter*, to arise from the application of spirits of hartshorn to the eye.

The *cure* is impossible ; for what medicines can restore to the dissolved vitreous humor its original density ? Bark, however, may be given.

Glasses may be tried as a substitute, which are convex, and surrounded, so as to admit a small portion of light, that the nervous irritability of the *membrana retina* may be diminished ; but this is a mere attempt to relieve, with little prospect of any success.

Prolapsus of the Vitreous Humor,

Is a prolapsus of the vitreous humor from a wound in the transparent cornea or sclerotica.

The effect. The falling out of a small quantity is not dangerous, for in a little time it has been restored ; but if the major part of the vitreous humor flows out, then the bulb of the eye flattens and collapses, the pupil closes, and an incurable blindness is the consequence.

The species are :

I. *A prolapsus from the pressure of the eye.* This happens in extracting the cataract, from the pressure of the assistant, or from an ill-formed *speculum oculi* pressing on the globe, instead of the bones of the orbit.

The prevention has been amply treated on under the article of the cataract.

II. *Prolapsus from a spasm of the muscles.*

See this under the accidents of the extraction of the cataract and *tetanus bulbi*.

The *speculum* I recommend prevents this accident, as it counteracts all contractile power in the muscles.

An oily draught, with opium, is proper when this symptom be apprehended.

Externally, the eye should remain bound up for a week or more, and the bandages may be moistened by the *aqua vegeto-mineralis*, which has sedative qualities.

DISEASES *of the* RETINA.*Photophobia,*

Is such an intolerance of light, that the eye, or rather the *retina*, can scarcely bear its irritating rays.

Such patients generally wink, or close their eyes in light, which they cannot bear without exquisite pain or confused vision.

The *proximate cause* is too great a sensibility in the retina.

The species are :

I. *Photophobia inflammatoria*, or dread of light from an inflammatory cause, which is a particular symptom of the internal ophthalmia.

It is cured by removing the cause of the inflammation. See *ophthalmia*.

II. *Photophobia from the disuse of light*, which happens to persons long confined in dark places or prisons ; on the coming out of which into light the pupil contracts, and the persons cannot bear light. The depression of the cataract occasions this symptom, which appears as though

fire or lightning entered the eye, the eye not being able to bear these strong rays of light.

A shade of silk worn over the eye, and its gradual admission to the light, proves a cure.

III. *Photophobia from a mydriasis.* The pupil being over dilated, admits too much light. The nervous retina cannot bear the rays.

The *palliative cure* requires covering the eyes with green silk.

The *radical cure* depends on the removal of the *mydriasis*.

IV. *Photophobia nervea, or a nervous photophobia,* which arises from an increased sensibility of the nervous expansion and optic nerve. It is a symptom of the hydrophobia, and many disorders both acute and nervous.

It is *cured* by removing the causes, according to art and circumstances of cases.

V. *Photophobia from too great light,* as looking at the sun, or at the strong light of modern lamps *. It is prevented or removed by avoiding the luminous object.

Amaurosis, or Gutta Serena,

Is a blindness with a dark pupil, which is dilated and immovable. There have been in-

* Though these lamps may be considered an useful discovery, yet they frequently do mischief to the eyes of the nervous and irritable.

stances of the amaurosis in which the pupil has been contracted, yet moveable, pale or pellucid even to the retina*.

It rarely happens, according to authors, that this disorder attacks one eye, but commonly both: but I have seen some instances in which the gutta serena has blinded one eye, yet the other has remained sound.

The *proximate cause* is a deficiency of the nervous influence in the retina, or an obstruction in its circulatory sanguiferous vessels †.

This dreadful disease rarely arises without some predisposing cause, which, if discovered, may sometimes be prevented by a skilful administration of proper remedies.

Prognostic. The amaurosis, or gutta serena, rarely comes suddenly, but gradually.

The *symptoms* of an incipient or beginning *gutta serena* are, weakened, cloudy sight, or vision appears to pass through a cobweb, network, discolored, or it is lighter than ordinary, imperfect; at last a perfect blindness succeeds, the pupil

* It is called *gutta serena* from the *Arabians*: for this particular species see *Richter*, fasc. ii. *Observ. Chirurg.* p. 62.

† All nerves and nervous expansions have minute arteries; whatever prevents the flowing of arterial blood occasions coldness of the part, insensibility of the nervous system. See my *Treatise on nervous Diseases, Palsy, &c.*

appears dilated, and yet light falls through the aqueous crystalline and vitreous humors.

It is known, then, by a dilatation and immobility of the pupil, accompanied with total darkness. Light makes no impression on the retina, or expansion of the optic nerve.

The species of amaurosis, in respect of causes, are the following :

1. *Amaurosis from a congestion of blood*, which arises from an overabundance of blood forced to the cerebrum, optic nerve, and retina.

The causes of congestion are, compression from the weight of gestation, especially if the body be bent forward; the force in labor; plethora from hot summer air, or insolation; suppression of the catamenia, the lochia, or hæmorrhoids; or omission of accustomed venæsection, and the abuse of spirituous liquors; vomitings, coughs, laughter, clamor, distention of the stomach by wind, hysteric flatulencies, and force of the wind through the œsophagus; inflation of the alimentary tubes, by which the blood is retained in the head; abuse of mercurials* or steel remedies; lastly, ophthalmia of the choroides, sanguineous apoplexy, inflammatory fever, and pregnancy, refer to the *gutta serena arising from plethora*.

* Cel. Theden *Unterricht für die Wundärzte bey Armeen*, 1774, f. 199.

It is known by the usual signs of plenitude, and of blood congested in the vessels of the eyes or head; and it happens to young persons of a full habit.

The *cure* of the sanguineous amaurosis requires a similar treatment to the true inflammatory *chemosis*.

1. Large and repeated bleedings.
2. Scarifications from cuppings in the neck, &c.
3. Leeches applied to the temples, internal and external canthus of the eyes.
4. Bleeding in the temporal artery, the angular vein, &c.
5. Powerful evacuants, as purges, diaphoretics, and antiphlogistics. See *chemosis*.
6. *Semicupia* and *pediluvia*, with nitre.
7. Fomentations and vapors: some recommend cold water; but this is an erroneous practice, except in an *atonia* of the vessels.

If the former remedies should be useless, there is reason to apprehend that the vessels that had been turgid are now relaxed, and that an *atonia* is present; in which case tonics are eligible.

The internal remedies, which are recommended in the *gutta serena* by various authors, are:

1. *Hemlock*, by Baron Storck.

2. *Extractum*

2. *Extractum aconitum*, by Baron Storck.
3. *Infusum florum arnicæ*, by Cel. Collin.
4. *Balsamum vitæ & sulph. aurat, antimon.* by Hoffman.
5. *Sulphur auratum antimonii tertiæ præcipitationis*, by Hoffman.
6. *Oleum animale Dippelii*, by Warner.
7. *Moschus*, by Warner.
8. *Decoctum ligni guaici*, by Wintringham.
9. *Calomel, mercurius corrosivus sublimatus*, joined with *tartarum emeticum*, formerly invented by me, and now recommended.
10. *Belladonna. Hannöversches Magazin 1774, ft. 27.*
11. *Decoctum saturatum corticis Peruviani ac radicis Valerianæ cum sale volatile cornu cervi*, by Nootnagell and Dresky.
12. *Vomits*, by Cel. Schmucker, Theden, and Richter.
13. *Radix bermudaëtyli*, by Linnæus.
14. *Tinctura cantbaridum*, by Brisbane.

All *chalybeate* and *steel* remedies, internally exhibited, do mischief in the *amaurosis*: they are apt to increase the blood towards the head and eyes.

The external remedies applied are :

1. Cold baths, by Warner.

2. The

2. The head being shaved, friction with flannel moistened with the fumes of amber, or with spirits of wine camphorated, the spine of the neck and back may be well rubbed, as advised by *Gendron*.

3. *Oleum animale Dippelii* dropped into the eye. *Acta Acad. Elect. Moguntinae*.

4. *Balsamum vitæ Hoffmanni* applied to the forehead and temples, by *Hoffman*.

5. Sternutatories or snuffs, by *Richter*.

6. Vapors of hot water with beans or coffee toasted, or infusions of the cephalic herbs, by *Heister*, *Hoffman*, and *Lieutaud*.

7. The breathing over the volatile spirit of *sal armoniac*, by *Schmucker*.

8. Friction on the bulb of the eye, and on the supraorbital region.

9. The electric sparks or stream. *Medical Inquiries*, and *various authors*.

10. The magnetic power, by *Nootnagell* and *Weber*.

11. *Gutta serena*, or *amaurosis* from a *serous congestion*, which originates from a serous or pituitous humor in the cortical substance of the brain, its ventricles, or in the basis of the cranium, or effused or congested near the optic nerves. This species may happen from a catarrh or recent cold badly treated, suppressed perspiration,

ration, a pituitous depofition, a ferous apoplexy, hydrocephalus, or dropfy of the brain or its ventricles.

This *gutta ferena*, arifing from ferum, happens chiefly to infants and the aged.

The *cure*, if practicable, requires diaphoretics, antimonials, purges, diuretics; blifters to the neck, behind the ears, to the vertex or back; iffues, fetons; and fome recommend vomits, which I think highly improper, as they force an increafe of fluid to the brain, and might do mischief.

If thefe remedies fhould not fucceed, a long courfe of antimonials, united with mercurials, may be tried, with the *lotio penetrans* and fumigations of cinnabar received up the noftrils and in the eyes.

Thefe laft remedies were my inventions; and in fome few inftances they have cured the *gutta ferena* by being continued many months.

III. *Gutta ferena*, or *amaurofis from imbecility of the retina*. The imbecility or an *atonía* of the retina is caufed by a commotion of the brain, too much ftudy and lucubrations, exceffive venery, a long ufe of the microfcope, a fudden and very fplendid light falling on the retina, or looking long at very luminous bodies, white, or fnow; it, laftly, arifes from an abufe
of

of narcotics, as opium, &c., or from the vapor of infected places long applied to the eyes.

The *cure* requires tonics and roborantia, as bitters, bark, preparations of vitriol both acid and dulcified, Hoffman's anodyne liquor, nourishing but an extreme dry diet.

Externally, cold bath to the eyes, vitriolic lotions, &c.

IV. *The gutta serena, or amaurosis of exhausted persons.* This follows profuse evacuations and debility of the whole body, particularly purgings, vomitings of blood, large salivation, too large bleedings, particularly during pregnancy.

The *cure* requires cardiacs and roborants, nourishing diet, with bark and cascarilla, or its extract, quassia, &c.

V. *The gutta serena, or amaurosis from the brain:* so the dropfy of the brain, blood effused within the cranium, induration of the brain, or any other disease about the *thalamus nervorum opticorum*, may occasion an incurable *amaurosis* or *gutta serena*.

VI. *Gutta serena, or amaurosis from any particular disease of the optic nerve.* Serum near the *thalamus nervorum*, or congested on the optic nerves or retina, which, in time, have degenerated into mucous crusts, earthy concretions, hydatids,

datids, encysted tumors, or collections of water, are amongst causes, &c.

Most of these species are incurable; nor are they discoverable during life, except from their incurableness: such circumstances, however, may be suspected. After death, by dissection, these causes of the incurable *gutta serena* have appeared; some of which I have been witness to in my anatomical researches.

When neither a dry diet nor the remedies already recommended succeed, when administered according to the circumstances of the cases and different constitutions of patients, there is too much reason to suspect these incurable causes exist; in all which cases the cure cannot be rationally expected.

As the remedies, even though long continued, cannot injure patients, nor make those blinder who are already totally blind, it may be justifiable to make attempts; and though no success may be the reward of the endeavors, yet neither patients nor their friends should reproach the art of medicine nor artists for not obtaining what in its nature was impossible. The censure or abuse which practitioners unjustly receive on these unfortunate complaints have deprived the afflicted from receiving that assistance which might, perhaps, in some instances, have effected a cure. The world at
large

large knows not the difficulties medicine has to encounter in the *gutta serena*; though a cure merits the highest applause, yet unsuccessful attempts, when guided by the most rational principles and honorable intentions, certainly do not deserve an unfavorable interpretation nor ingratitude. The latter cases, it should be observed, however, are generally incurable; and it should always be at the patient's option whether any thing should be tried.

The attempts should be made by the use of the *lotio penetrans* and friction, the *mercurius sublimatus corrosivus* with the *antimonium tartarizatum*, as recommended in the incipient cataract; calomel and James's powder, or the *pulvis antimon.* of the new London Dispensatory; Plummer's pill and nitre, and alterative powders composed of nitre and cinnabar, or *Æthiops mineral*, equal parts; lixivious or saponaceous remedies, with fumigations of *Æthiops mineral* or cinnabar received up the nostrils, or into the internal canthus of the eye; mercurial unguents with camphor may be applied on or above the eyebrows, where the supraorbital nerve enters, or in the directions of the *sagittal* or *lambdoidal sutures*; cuppings and scarifications may be used on those latter parts, and on the *processus jugulis*; bleedings in the jugular; evacuations, extreme dry diet, sweating by antimonials, so

as not to excite nausea; or the long-continued use of mineral alteratives, composed of *calomel* or *argentum vivum* and the *Kermes mineralis*, *sulphur auratum antimonii*, united by long trituration, and given in doses of from one to two grains three or four times a day in the form of pills, with solutions of nitre and volatile alkali, camphor, &c., after each dose.

Such are the modes by which I have cured some few cases; but I must positively declare, that, out of several hundred patients, I have not often seen one cured by any means. This is so discouraging, that it must be left to patients and practitioners to consider whether they should make attempts in many instances wherein success is so doubtful.

VII. *Gutta serena*, or *amaurosis periodica*, or a *periodical gutta serena*, which every day, every other or third day, occasions blindness.

The *cause* of this species is commonly in the *prima via*, from relaxation or a serous and relaxed tendency in the blood, or the absence of due coherence; the same as in the intermittent fever.

The *cure* consists in cleansing the *prima via* and intestines by calomel and rhubarb, or by an aloetic purgative; then, in the intermission, to give the *cortex Peruvianus*, with aromatics, the
vitriolic

vitriolic acids, or Hoffman's anodyne liquor; and, in obstinate cases, from an eighth to half a grain of the *vitriolum album* may be added to the bark, instead of the vitriolic acid, in the manner I have advised to cure the intermittent head-ach in my Treatise on female, nervous, and mental Diseases, &c.

VIII. *Gutta serena febrissequa*, is that which follows intermittent or acute fevers.

This species is cured by a seton in the neck, by the tonics that are proper to restore the constitution to its pristine vigor.

IX. *Gutta serena from a wound of the eyebrow*. This happens on the cure of the wound, and seems to originate in a crispness or injury received in the superciliary nerve.

The *cure* requires friction on the healed part with Hoffman's anodyne liquor, *spiritus vini camphoratus*, or a fomentation of dissolved camphor, &c. The *spiritus formicarum* has been recommended by the celebrated *Platner*.

X. *Gutta serena from a disease of the frontal sinus*.

It is known by a violent pain in the frontal sinus, or by an evident disease in the sinus.

The *cure* requires the removal of the cause, if it be possible, which it rarely is, if within

the sinus *. Mineral alteratives should be long continued, unless surgery can remove the cause.

xI. *Gutta serena*, or *amaurosis* from a consent of the eyes, which, when one eye be affected, the disorder happens in the other; so the *amaurosis* happening in one eye, the other sometimes becomes gradually blind.

A seton or issue in the neck may prevent this malady, as some writers declare; but, besides this artificial discharge, I always recommend a long-continued mineral alterative course, and this I am inclined to think on true medical principles, and frequently with advantage †.

xII. *Gutta serena congenita*. Children sometimes are born with the *gutta serena*; in these the pupil is generally immoveable, but not dilated.

In such instances irritating lotions are recommended to remove the torpor of the retina.

I have cured two such cases in infancy by prevailing on the wet nurse to take penetrating mineral alteratives, while the *lotio penetrans* diluted was daily applied to the eyes, and gentle friction used on the lids.

xIII. *Gutta serena hereditaria*, or what happens to many in the same family.

This species is generally incurable.

* Richter, l. c. 54.

† When one eye has been blind, I have preserved the other by this means.

xiv. *Gutta serena venerea*, which arises from a venereal acrimony fixing on the retina, or from a toph of the cranium compressing the optic nerve*.

The *cure* requires antivenereal remedies.

I should observe, that these tophs are nothing else but the periosteum thickened; and when it be considered that the internal periosteum runs between all the osseous fibres, and composes the cells in which the ossified matter is deposited, the difficulty of removing such depositions must be obvious.

Mercurial frictions, the *lotio penetrans*, mercurial fumigations received up the nostrils, antimonials and mercurials joined and given as alteratives, and continued many months, or even for a year or more, are highly adviseable. I have cured some cases of this nature by a long perseverance in the use of those penetrating decided remedies, but have never seen one case cured by any other method.

xv. *Gutta serena scrophulosa*, or the *scrophulous gutta serena*, which sometimes happens to children with scrophulous symptoms, by the acrimony fixing on or near the optic nerve or retina.

* This has been proved by dissections after death.

The *cure* requires Plummer's pill, mercurials and antimonials, *lotio penetrans*, fumigations, &c.

xvi. *Gutta serena exanthematica*, which arises from the suppression or repulsion of any eruption on the skin, from the scald head, the herpes, miliary and other eruptions.

Ulcers suddenly healing from some retropulsive cause have produced the gutta serena*.

The *cure* of these cases consists in removing the causes by diaphoretics of the antimonial kind, by setons, issues, blisters, diuretics, purges, alteratives, or if from an ulcer dried up, the reproduction of the discharge. See the Treatise on Ulcers of the Legs, &c.

xvii. *Gutta serena abdominalis*, which arises from some disease of the abdomen, as acid, bilious, or pituitous saburra, worms, &c. This species has been sometimes, though rarely, observed amongst hysterical females, or the

* This never happens if the alterative modes of treatment be adopted that are recommended in my Treatise on ulcerated Legs, and their Cure without Rest, &c., by removing acrimony. In the little work, called *Truth Vindicated*, written in defence of my definitions of mental diseases, in which it is decidedly proved that the mental irritation of a *Great Personage* was only accidental and symptomatic, some causes of mental derangement are ascribed to the retropulsion of any eruption or acrimony to the brain or its membranes, &c.

hypocondriacal, from the cholic occasioned by lead, from violent anger, &c.

The *cure* requires the elimination of the *faburra*; hence concluding from the signs, whether it be moveable or immoveable, upwards or downwards, various remedies are necessary.

Tenacious and glutinous *faburra* is removed by *sal sodæ* and infusions of *sena*; lixivious or saponaceous remedies; by calomel and aloetics, with infusions of *sena* and *tartarum solubile*. If the *faburra* be supposed to be in the stomach, vomits are recommended, but certainly injudiciously; for driving fluids upwards, and distending the vessels of the face and eyes by vomiting, must rather dilate the sanguiferous vessels, and check the return of the blood to the heart: therefore in *no case* of eye diseases are vomits proper. Purges will answer every purpose, unless bile should already be in the stomach, then it will in some instances force itself up by vomiting; but if it can be conveyed downwards, it is by far the most eligible method.

The acid *faburra* is corrected or evacuated by alkalies, calcined magnesia and *sena*, &c.

The bilious is corrected and evacuated by tamarinds, cremor tartar, aloetics and *sopa*, calomel and aloetics, rhubarb, &c.

Worms are removed by *sal sodæ* and *Æthiops*
X 3 mineral,

mineral, fena, purgatives, with rhubarb, calomel, and valerian, &c.

From saturnine causes, by oleaginous purges, volatiles, clysters, &c.*

xviii. *Gutta serena spasmodica*, which arises from pain or spasm, or consent of the nerves. This *amaurosis* has originated from great terror, or vehement pain of the head, kidneys, or other part; from a wound on the eyebrow or temporal muscle; from convulsions, epilepsy, tetanus, hysteric passion †.

The cure requires antispasmodics, and the removal of the primary causes, according to circumstances: hence opiates, nervine remedies, tonics, musk, valerian, camphor, &c., may be useful.

xix. *Gutta serena partialis*, in which one half, more or less, of the retina is insensible to light, and occasions half vision.

It is cured in a manner similar to the others.

xx. *Gutta serena complicata*, which is joined

* See, in the Treatise on nervous Diseases, &c., an extraordinary case of Mr. Hankey, who by accident swallowed two ounces of the extract of lead, which was successfully treated.

† See convulsions, their cause, and treatment, in the above Treatise.

with a cataract, *myosis*, *synezeisis*, *synchesis*, or other ocular disease.

These are all incurable, unless the *gutta serena* be first cured.

Oxyopia,

Is the faculty of seeing more acutely than usual.

There have been instances known of persons who could see the stars in day time.

The *proximate cause* is a preternatural sensibility of the retina,

The species are :

I. *The oxyopia of prisoners* who have been long detained in darkness, have learned to read and write in darkened places.

II. *The oxyopia, or acute vision from an incipient gutta serena.* This species is the forerunner of the amaurosis*.

The *cure* requires the same modes of treatment as in the *amaurosis*.

III. *The oxyopia of a plurality of objects*, is a vitiated vision, in which a person sees two or three diverse objects clearly at the same time.

The reason of this phenomenon is either in

* See *Cel. Nootnagell*, l. c. p. 3.

the abolition of the original point of sight in the retina, or many places of the retina are so sensible that the light avoids the point of sight in the retina, and the rays strike in different directions, and thus give the idea of many objects at the same time.

This differs from that species of *oxyopia* from the disorder called *diplopia*, for in this a person sees an object two or three times over. See *diplopia*.

The *radical cure* is different, as the causes may be various, and often difficult to remove; but it should be treated according to circumstances.

The *palliative cure* requires a tube, which prevents the eye seeing objects laterally; for the vision of many objects renders the sight confused.

Amblyopia,

Is a debility of sight without any visible affection of the eye.

The *myops* and *presbytae*, or the short and long visioned, see objects confusedly, except at certain distances; the *nyctalopes* and *hemeralopes* see badly in certain times of the day; but the *amblyopes*, in whatsoever distance or time of the day, experience a debilitated vision.

The *proximate cause* of the idiopathic *amblyopia* is a diminished sensibility of the retina;
but

but the *symptomatic amblyopia* is seated in the cornea, aqueous humor, pupil, in the crystalline lens, or in the vitreous humor.

The following species of *amblyopia* may happen :

I. *Amblyopia from a clouded cornea*, when the whole or part of the transparent cornea is obscured by a cloudy appearance. The opaque points deny the admission or passage of many rays of light : hence a less number of rays pass to the retina.

The *cure* requires the removal of the cloudy obstruction. See *maculæ and obscurations of the cornea*.

II. *Amblyopia from the humidity of the cornea*, which happens in the *epiphora*. The humidity adhering to the cornea refracts the rays of light. See *epiphora*. Desiccative lotions are proper.

III. *Amblyopia from a dryness of the cornea*. This is remedied by the humectation of the cornea, either by light lotions or removing the causes of dryness.

IV. *Amblyopia from a turbidness of the aqueous humor*. This, as in the turbid cornea, transmits too few rays of light to make the proper impression on the retina for perfect vision.

It is *cured* by restoring the pellucidity of the aqueous

aqueous humor. See *turbidness of the aqueous humor*.

v. *Amblyopia from a diminished quantity of the aqueous humor*: by this the cornea contracts a little, and pellucidity is diminished or lost.

It is cured by the restitution of the aqueous humor. See *atrophia oculi and rhytidosis corneæ*.

vi. *Amblyopia from an abundance of aqueous humor*, which is observed in an incipient *hydrophthalmia*. The focus of the rays is formed, in this case, before the retina.

vii. *Amblyopia from a myosis of the pupil*; for this being too contracted, admits too few rays of light. See *cure of the myosis*.

viii. *Amblyopia from an incipient cataract*. The lens beginning to become opaque, or its capsula, do not admit sufficient rays to pass. See *cataract*.

ix. *Amblyopia from an incipient glaucoma*. This produces the same effect as the last. See *glaucoma*.

x. *Amblyopia from an incipient gutta serena*. In this disease the retina begins to be insensible. See *amaurosis*.

xi. *Amblyopia from a topical atonia of the retina*. The causes which occasion this debility is
an

an hereditary disease ; looking too long at the sun, moon &c., as happens to astronomers, or at fire, as in some trades ; too intense vision, which happens to those who view constantly minute objects, write much at night without a shade, or read or paint perpetually in a strong light ; or the abuse of venery, which frequently debilitates the stomach first, and then the eyes.

These species of *amblyopia* not unfrequently terminate in the *amaurosis* or *gutta serena*.

The *cure* requires, 1. that the causes of the disease should be first avoided ; 2. that a strong light should not be admitted, that the eyes may be strengthened by internal and external tonical medicaments.

The *retina* is strengthened :

1. By avoiding light : hence those who have been confined in obscure prisons learn to read and write in very dark places.

2. Black tubes, which prevent the admission of superfluous light*.

3. Green spectacles, which moderate the light.

4. The remaining in a chamber that has only one window, or even that window shaded.

* See *Boerhaave Tract. de Morbis Oculorum*, Goet. 1750, p. 175.

Green walls; for green color strengthens the eyes.

5. The flame of lamps or light should be covered with a green shade, such as are made by *Finchett* in *Fleet Street*, and in other places.

6. For minute works, and reading, a large green glass should be applied; or the patient should wholly abstain from reading, and should look at green walls or fields*.

Externally, the distilled waters of mint, roses, fennel, and a little spirits of rosemary or brandy, may be used, or a little spirits of wine camphorated diluted with water; cold bath to the eye of spring or chalybeate water should be frequently applied, such as is to be found at *Hampstead*, *Tunbridge*, &c.

Internally, all relaxing liquids, as tea, &c., should be used sparingly; the *cortex Peruvianus*, vitriolic acid, *flores zinci*, *liquor anodynus Hoffmanni*, and similar tonics, should be prescribed, according to the nature of the case and constitution of the patient.

When the disorder arises from other causes

* Experience proves that green color is more useful to the eyes than black; for green seems gradually to diminish the tension of the retina, but black suddenly relaxes it. Green fields and moderate light are extremely easing to the eyes, when compared to white sands, &c., which pain the eyes in much light.

or diseases of the eye, the primary disease must be cured before the weakness of sight can be removed.

The *palliative cure* is obtained by the use of spectacles, convex on both sides, or concave, according to the circumstance of the patient seeing near, as in the *myops*, or at a distance, in the *presbyta*; for by the help of these spectacles the rays of light are collected in certain points, and more powerfully strike the object on the retina.

XII. *Amblyopia from a debility of the nerves, or whole nervous system*, as may be observed after unusual evacuations, and in persons recovering from acute fevers, or other violent disorders.

The *cure* requires cordials, proper nourishments, and tonics, &c.*

XIII. *Amblyopia senilis*, or from old age. Many are the causes of this *amblyopia*, as diminished sensibility in the retina, a yellowish crystalline lens, a turbid or cloudy cornea.

For the palliation of these species, *spirits ro-ris marin.* and water, or rose water, &c., may be used; the radical cure being, in general, impossible.

* See my Treatise on female and nervous Diseases.

Nyctalopia,

Is a defect in vision, by which the patient sees little or nothing in the day, but in the evening and night sees tolerably well *.

The *proximate cause* is various.

I. *Nyctalopia from a periodical amaurosis or gutta serena*, when the blind paroxysm begins in the morning and terminates in the evening.

The *cure* requires stomachic purgatives, with small doses of calomel, blisters behind the ears; but the most effectual remedies are the *cortex Peruvianus*, with the vitriolic acid, *flores zinci*, or small doses of the vitriol album, as recommended in my Treatise on the nervous Diseases to cure the intermittent head-ach, &c.

II. *Nyctalopia from too great a sensibility of the retina*, which cannot bear the meridian light, See *phobotomia* †.

III. *Nyctalopia from an opaque spot in the middle of the crystalline lens*. When the light of

* Illustr. Haller. *Element. physiol.* Tom. V. p. 490, and Cel. Rohde *Diff. de Nyctalopia ac Hemeralopia, visu simplici & duplici*, Jenæ, 1774.

† It does not appear repugnant to reason that these persons can see by the light of the moon or a candle; for the light of the sun, compared to a candle, is as 11,664 to 1, and the light of the full moon as 374,000 to 1.

the sun in the meridian contracts the pupil, there is blindness; about evening, or in more obscure places, the pupil dilates: hence the rays of light pass through the limbus of the crystalline lens.

The *radical cure* requires the depression or extraction of the crystalline; but this operation should not be undertaken on slight grounds, but in cases of the utmost necessity it may be performed. See *cataract*.

iv. *Nyctalopia from a disuse of light*: thus persons who are educated in obscure prisons see nothing immediately in open meridian light; but by degrees their eyes are accustomed to distinguish objects in daylight*.

v. *Nyctalopia from an immobile mydriasis*; for in this instance the pupil admits too great a quantity of light, which the immobile pupil cannot moderate: hence the patient, in a strong light, sees little or nothing.

The *palliative curation* requires green glasses; but for the *radical cure* see *mydriasis*.

* I remember well, that, on my first going into the King's service in the beginning of the year 1761, I, being very young, was induced to study and constantly read in the part allotted to the medical assistants in the cockpit, which is quite dark, and I was obliged to read by candle light. When I went on the quarter deck I could not for a considerable time distinguish objects; so that the officers thought me blind.

vi. *Nycta-*

VI. *Nyctalopia from too great a contraction of the pupil.* This admits a sufficiency of lucid rays in bright light, but towards night the pupil dilates more, and the patient sees better.

This coarctation of the pupil is sometimes inflammatory, at others spasmodic; therefore the cure requires antiphlogistics and evacuants, or antispasmodics and tonics, which the judicious practitioner should direct according to circumstances, seasons, and constitutions. See *myosis*. Fomentations of marshmallow roots boiled in water, or *hyosiamus*, are much extolled.

VII. *Nyctalopia endemica.* A whole people have been nyctalopous, as the Æthiopians, Africans, Americans, and Asiatics. A great flow of tears are excreted all the day from their eyes; at night they see objects*.

VIII. *Nyctalopia from a commotion of the eye;* from which a man in the night saw all objects distinctly†.

Hemeralopia,

* Illust. Haller, l. c. Tom. V. p. 490, and Rohde *Dissertat. de Cicuta*.

† *Miscellanea A. N. C.* Dec 1. Ann. 1. A string of a fiddle breaking by being drawn very tight, the string violently struck the eye, which inflamed; the patient distinguished the smallest lines of figures or images, and letters of books, at night. The diseased eye being closed, he could not see in the day,

Hemeralopia, or Crepuscular Blindness,

Is a defect of vision, in which the patient sees perfectly well all day ; but in the crepuscular or dilucular light, as in evening or morning, perceives little or nothing.

The species are :

I. *Hemeralopia from an incipient gutta serena*, in which the patient sees well in the meridian light ; but neither in the evening light nor candle light are objects perfectly perceived.

It should be treated as an *amaurosis*.

II. *Hemeralopia from a periodical gutta serena*.

It is cured by a purgative, bark, and tonics.

III. *Hemeralopia from suppressed transpiration of the eye*. Perhaps the retina may be inundated with the transpirable fluid more about the evening time, because the air is frigidier than in the day.

The cure should be attempted by evacuants, but principally by antimonial diaphoretics, *spiritus Mindereri*, &c.*

day, nor could he bear the light of a candle. This disorder vanished in a few days afterward. I have known similar instances.

* Richard De Hautehierck *Recueil d'Observations de Medecine des Hospitaux*, l. 2, & Cel. Weiz neue Aufzüge aus Dissertationen fur Wundärzte, 6 b. 50 f.

IV. *Hemeralopia endemica*. In China and Barbadoes, as well as in Moldavia and the Molucca Isles, in Mosambica, Brazils, and in Poland, this disease is not unfrequent.

Myopia,

Is a difficulty of seeing objects a little distant*.

The *myopes* are considered those persons who cannot see above twenty inches distinctly. The *myopia* is likewise adjudged to all those who cannot see three, six, or nine inches.

The *proximate cause* is the adunation of the rays of light in a focus before the retina.

The species are :

I. *Myopia from too great a convexity of the cornea.*

The *cause* of this convexity is either from nativity, or a greater secretion of the aqueous humor: hence on one day there shall be a greater *myopia* than on another. An *incipient hydrophthalmia* is the origin of the *myopia*.

The *cure* is expected from evacuations and greater age.

III. *Myopia from too great a longitude of the bulb.* This length of the bulb is native, or ac-

* Illust. Haller *Element. Physiolog.* Tom. V. p. 496, and *Hamburg Magazin*, Tom. XXIII. p. 279.

quired from a congestion of the humors in the eye : hence artificers occupied in minute objects, as the engravers of seals, and persons reading much, frequently after puberty become *myopes*.

This is *cured* by an abstinence from viewing minute objects, &c.

III. *Myopia from too great a convexity of the anterior superficies in the crystalline lens.* This is likewise from birth.

The parallel rays which fall into the cornea, by so much they fall more obliquely, so much the more convex is the cornea or crystalline lens, or vitreous humor in the anterior superficies. But the angle of refraction is equal to the angle of incidence ; therefore the angle of refraction so much sooner will be formed as the cornea or lens is more convex. This perfectly accounts for short sightedness : but an anterior too great convexity of the cornea is the most common cause.

IV. *Myopia from too great a density of the cornea or humors of the eye.* Optics teach us, by so much sooner the rays of light are forced into a focus, by so much the diaphanous body is denser.

V. *Myopia from a mydriasis or too dilated a pupil ;* for so much the wider the aperture of

the diaphragma is, in an optical instrument, so much the nearer is the focus.

VI. *Myopia infantilis*. Infants, from the great convexity of the cornea, are often *myopes*; but by degrees, as they advance in years, they perceive objects more remotely, by the cornea becoming less convex.

When the *myopia* originates and continues from too great a convexity of the cornea, the cure is often impossible; but as short-sighted persons advance in years, they see remoter from the cornea becoming less convex, and the aqueous humor diminishing, which happen in old age: so that the shortsighted are comforted with the expectation of seeing better and more distant the older they become.

The *palliative cure* of the *myopia*, or short sightedness, is obtained by looking through blackened tubes without glasses, or through a small foramen or hole of a card, and by concave spectacles.

Presbyopia,

Is that defect of the sight by which objects close are seen confusedly, but at remoter distances distinctly*.

* Illust. Haller *Element. Physilog.* Tom. V. p. 501.

As the *myopia* is common to infants, so the *presbyopia* is a malady common to the aged.

The *proximate cause* is a tardier adunation into the focus, so that it falls beyond the retina.

The species are :

I. *Presbyopia from a flatness of the cornea.* By so much the cornea is flatter, so much the less and more tardy it refringes the rays into the focus. This evil arises, 1. from a want of aqueous or vitreous humor, which is common to the aged, or may arise from some disease; 2. from a cicatrix, which diminishes the convexity of the cornea; 3. from a natural conformation of the cornea.

II. *Presbyopia from too flat a crystalline lens.* This evil is most common to the aged, or it may happen from a wasting of the crystalline lens.

III. *Presbyopia from too small density of the cornea or humors of the eye.* By so much more these humors are thin or rarefied, so much the less they refringe the rays of light. Whosoever is a *myops* from this cause is cured in older age; for age induces to a greater density of the cornea and lens. From this, it is an observed fact, that the *presbyopes* are often cured spontaneously, and throw away their glasses,

which younger persons in this disease are obliged to use.

v. *Presbyopia from a custom of viewing continually remote objects*: hence artificers who are occupied in remote objects are said to contract this malady. The reason of this phenomenon is not very clear.

vi. *Presbyopia senilis*. From a multitude of causes aged persons are *presbyopes*; from a penury of humors, which render the cornea and lens flatter, and the bulb shorter. When in senile age, from dryness, the bulb of the eye becomes flatter and shorter, and the cornea flatter, those who were short sighted or *myopes* before see now without their concave glasses.

vii. *Presbyopia from too close a proximity of objects*. The focus is shorter of distant, but longer of nearer objects.

viii. *Presbyopia from a contracted pupil*. By so much smaller is the aperture of the diaphragm in an optic tube, so much remoter is the focus.

The *radical cure* is impossible, unless by age it becomes removed.

The *palliative cure* requires convex spectacles; for these so refringe the rays from which comes the long point of sight.

ix. *Pres-*

ix. *Presbyopia mercurialis*, which arises from the use of mercurial preparations; the patient feels a pressing pain in the eye, which, from being touched, is increased, and the bulb of the eye appears as if rigid, and with difficulty can be moved. Near objects the patient can scarce distinguish, and distant only in a confused manner.

Many have supposed this disorder an imperfect *amaurosis*.

The cure requires venæsection, fomentations of leaves of mallows, aqueous vapors, laxatives, and sulphureous preparations, which counteract the effects of mercury.

When the pain of the eye ceases, a plaster of gum tacamahac may be applied to the temples; though I do not think this of great importance, but mention it rather in compliance with other authors.

The electric spark or stream may be applied in this case with advantage; some instances of which I have known. Decoction of sarsaparilla I have likewise recommended with some light antimonial.

When the sight returns as usual, cold bathing the eye will be useful *.

Hemiopsia,

* Monf. Marat, on a singular Disease of the Eyes, Lond. 1776. This ingenious gentleman I well knew: he has been,

Hemiopsia,

Is a defect of vision in which the patient sees the half, but not the whole, of an object.

The species of this disorder are :

I. *Hemiopsia from a speck in half the cornea or lens.* In this case half the rays of light are intercepted.

The *cure* requires the removal of the opacity in the cornea, or the crystalline lens must be extracted. See *maculæ corneæ*.

II. *Hemiopsia from a gutta serena of half the retina.* This happens when half the retina is paralytic, and the other half sound.

The *cure* requires, if possible, the removal of the cause.

III. *Hemiopsia nervea*, which seems to have its seat in the optic nerve.

It is *cured*, if practicable, by nervous remedies and proper evacuants *. See *amaurosis*.

it seems, very instrumental in producing the late revolution in France, and restoring the rights of the people: he was lately (1790) in London.

* Cel. Abrah. Vater in *Dissert. de duobus visus vitiis, altero duplicato, altero dimidiato*. Wittembergæ, 1713. — Three cases of this sort are related. See *Miscellanea N. C. anni v. vi. obs. 107*.

Myodesopsia,

Myodesopsia, or the Appearance of Flies *.

It is a disease of the eyes in which the patient sees black spots, an appearance of flies, cobwebs, or black wool, before his eyes. This black point seems to float when the patient moves the eye, and remains fixed. Persons who have a more sharp vision, and are in a serene light, experience this appearance of black spots, &c.

The *proximate cause* is an opaque point in some part of the retina, or from an opaque humor or some distended vessel, or from an effusion in the superficies of the retina itself, or from a varicous vessel pressing on the retina †.

The species are :

I. *Myodesopsia from an opaque point in the retina*, which is a partial species of the *gutta serena*, and if not timely relieved, often terminates in that very melancholy disorder.

It must be treated as the *amaurosis*, and the patient should avoid light.

* Derived from *μῦς* and *ὄψις*, vision.

† These causes will be perfectly understood by anatomists ; but whoever wishes to comprehend the anatomy of the eye accurately may peruse my *Schola Medicinæ universalis nova*, where are many plates and printed descriptions of the human eye.

II. *Myodesopsia sanguinea*, which arises from a congestion of some vessel of the retina.

This species arises in the phrenitis, in plethoric habits, from the heat of the sun, from suppressed menses or hæmorrhoids, and from a long inclination of the head forwards.

The *cure* requires bleeding, revulsive remedies, and repellents externally, and cold water applied to the eye. *Myodes* of the phrenitis are often solved by a nasal hæmorrhage.

III. *Myodesopsia from an atonia of the retina*, which arises from much reading, lucubration, by the frequent use of telescopes or microscopes, or from a vehement focus of rays falling on the retina.

The *cure* requires the removal of the causes; the application of fomentations made of cold water. Internally, tonics, and roborants of *cortex Peruvianus*, with valerian, &c., are to be prescribed. The supercilium may be rubbed with *liquor anodynus Hoffmanni*.

IV. *Myodesopsia from a contusion of the eye*, by which, perhaps, some drops of fluid may be poured out on the retina.

It is *cured* by bleeding and discutient fomentations*.

Visus

* There are authors who think that the *myodes* can be excited by an opaque point of the crystalline lens, or by a speck in

Visus Reticularis,

Is a defect of the eye, by which the patient perceives something like ramified shady branches or fine network, or something similar to a cobweb.

The *proximate cause* is a turgency of the vessels of the retina compressing this exquisite membrane.

The species are :

I. *Visus reticularis*, or *net-like vision*, from a congestion of blood in the retina : so the breath held, or the head inclined forward a long time, at pleasure we can procure reticulated vision. This species is fugitive, and vanishes on the remote cause being removed.

II. *Visus reticularis permanens*, or *permanent reticulated vision*, which is constantly present. In this species the vessels of the retina, from an atonia of the retina, are constantly turgid.

in the cornea, or by a corpuscle floating in the aqueous humor ; but whoever more attentively considers optics will easily find the images of things to be seated before the retina, and altogether projected without the eye, never depicted in the eye. No cicatrix upon the cornea, or body floating in the aqueous humor, nor spots in the crystalline lens, are perceived by the retina in the form of corpuscles, flies, &c. These causes may give rise to a debilitated vision, or *amblyopia*, but cannot cause a *nyctopsia*.

In

In the *cure* an extreme dry diet, tonics, and cold bathing to the eye, are requisite.

Visus Nebulosus,

Is a malady of the eye, in which the patient thinks he sees through a cloud, linen, or shades.

The *proximate cause* is either an obstructed passage to a sufficient quantity of lucid rays, or an insufficient sensibility of the retina.

The species are :

I. *Visus nebulosus*, or a cloudy vision from a beginning or incipient cataract, which admits but very few lucid rays to the retina.

This can commonly be seen by the discoloration of the crystalline lens or its capsula.

The *treatment* should be the same as in the incipient cataract.

II. *Visus nebulosus* from an incipient gutta serena. When the retina is almost insensible, it is scarcely affected by the rays of light.

The *cure* is the same as in the amaurosis.

III. *Visus nebulosus*, or clouded vision from a leucomated cornea: through the opaque places the required rays are not permitted to pass.

For the *cure* see maculae and obscuration of the cornea.

IV. *Visus nebulosus*, or clouded sight by a turbid aqueous

aqueous humor. If but few rays can pass through this humor, an obscured cloudy vision is the consequence.

It is required in the *cure* that the humor should be rendered clear, which often happens without medical assistance; or it must be let out by an incision through the cornea, and the humor in twenty-four hours generally regenerates: many instances of which I have been witness to.

v. *Visus nebulosus, or clouded vision from an incipient glaucoma or tubidness of the vitreous humor.*

The *cure* is rarely possible. See *glaucoma* *.

vi. *Visus nebulosus from an incipient animi deliquium or fainting.* In this case not only a nebulous vision, but, lastly, darkneses are observed from the secession of the nervous influence in the retina.

The *cure* consists in the removal of the deliquium or syncope. See *my Treatise on nervous and female Diseases.*

vii. *Visus nebulosus, or clouded vision from an atonia of the retina.* For the cause and cure of this see *amblyopia from a debility of the retina.*

* This happened to one eye of that great English painter, that excellent artist, Sir Joshua Reynolds, by whom I was consulted.

VIII. *Visus nebulosus*, or clouded vision from the action of poisons.

Emetics remove the poison from the stomach, or remedies that counteract poisons*.

* I was called about two years ago to a young gentleman in Bond Street, who had swallowed above *two drachms of granulated corrosive sublimate*, and after it a *quarter of a pint of liquid laudanum*. Before I came he had a vomit of white vitriol prescribed by Mr. Scarman. I, finding his pulse scarce perceptible from the effects of the opiate, immediately ordered a large bleeding, lest the blood should stagnate in the venal system. Mr. Scarman, jun. advised a tepid bath for his feet, to keep up the circulation. Internally, I ordered the volatile spirits with lime, and then spirits of hartshorn and warm water to be drank continually, in order to *destroy the corroding powers of the corrosive sublimate*, and convert that preparation into a species of *white precipitate*. It was a chemical idea, and shews the necessity of a chemical knowledge of the combination of preparations. Authors inform us that *one grain of corrosive sublimate has proved fatal*: this gentleman had taken *three hundred grains*, or thereabouts. *Enormous vomitings* continued all night, from the action of the *corrosive sublimate* being converted, as it dissolved, into a *white precipitate*; but the gentleman's life was preserved: he perfectly recovered, and is living at this present time. Another instance of an extraordinary recovery, after the swallowing of two ounces of extract of lead by Mr. Hankey, the banker, by accident, may be seen in the Treatise on nervous Diseases.

Metamorphopsia, or Disfigured Vision,

Is a defect in vision, by which persons perceive objects changed in their figures *.

The species are :

I. *Metamorphopsia acuta*, when objects appear much larger than their size †.

This has its origin in a *myopia*, saburra in the *prima via*, or in a nervous affection.

II. *Metamorphopsia diminuta*, when objects appear diminished in size, arising from the same causes as the former.

They have been *cured* by evacuants, blisters, antiphlogistics, or tonics, according to circumstances.

III. *Metamorphopsia mutans*. Objects seem to be in motion ; to the vertiginous and intoxicated persons, every thing seems to reel and stagger.

* Metamorphosis is the mutation of figure ; figure is the limit of extension : hence I constitute the species of this disease to be a changed magnitude and circumscription of a figure.

† I remember a nervous patient applied to me some years since, who saw objects of uncommon magnitude : a shed he took for a high house, a house for a lofty church, &c. I ordered a seton in his neck, by which he lost some blood from branches of the occipital vein, which is connected with the brain, and he recovered immediately.

When

When this arises from disease, it must be treated according to circumstances, constitutions, age, sex, &c., of which enough has been said.

IV. *Metamorphopsia tortuosa seu flexuosa*, when objects appear tortuous or bending.

The causes of this is either in the stomach, or in an affection of the nervous system: hence stomachic evacuants, antispasmodics, and tonics, are necessary in the cure*.

V. *Metamorphopsia inversa*, when all objects appear inverted†.

VI. *Metamorphopsia imaginaria*, is the vision of a thing not present, as may be observed in the delirious and in maniacs.

* An illustrious physician of Narbonne, eighty years old, to whom, for some days, all objects seemed bent or tortuous, or reeling from side to side. This disorder vanished, but the sight remained obscure. Vide *Illust. Sauvages Nosol. Method.* Tom. II. p. 190.

† I remember seeing, among the poor on my public days, an instance of this sort; but do not know the consequence, as the person came but once.

Senertus gives an example:—An archiater of Dresden, ascending the ladder in his library, and turning his eyes too much upward, suddenly perceived all visionary objects inverted. This affection remained for a quarter of a year, until, by the same accident by which it came, it again vanished. *Sennert. Prax. Med.* l. i. c. 3. f. 11.

The

The *cure* consists in removing the cause which gave rise to the imaginary vision *.

VII. *Metamorphopsia from a remaining impression*: it happens to those who very attentively examine objects, particularly in a great light, some time after to perceive the impression.

Cbrupsia, or Colored Vision,

Is a disorder of the eye in which the patient sees objects tintured with a different color to what they really are, as if of a rainbow or tail of a peacock †.

The *proximate cause* is a strange color in the retina, or a pressure of the retina similar to irritation, which a focus of color excites in the retina.

The species are :

I. *Cbrupsia of the jaundiced*. To some persons in the jaundice all objects appear yellow ‡.

* Cel. Delii *Dissert. Phantasmata ante Oculos volantia*. Valsalva saw a man who thought he saw a palace finely decorated and painted always before his eyes.

† *Χρῦσις* is derived from *χρῶς* and *ὄψις*, vision.

‡ I say some, because not all jaundiced persons see every thing yellow. The celebrated *Durazzani*, on dissecting a jaundiced eye, saw the coats and humors all yellow. In another instance, wherein objects did not appear yellow, no part, except the capsula of the crystalline, appeared yellow. See *Torgioni Raccolta di Opusculi medico-practici*, Tom. I.

It is *cured* by calomel in a quarter of a grain night and morning, with some light aloetic pill and *sal. diureticus*, in bitter infusion before dinner and supper.

II. *Cbrupisia from effused blood.* If cruor in the chambers of the eye be effused, or about the retina, objects appear to be tinged with a red color.

The *cure* requires venæsection, antiphlogistics, evacuants, &c.

III. *Cbrupisia from a vehement friction of the eye*, particularly in darkness. It is remarked that imaginary peacock's colors are sometimes excited, which soon vanish.

IV. *Cbrupisia febrilis.* The sick, who labor under pestilential fevers, sometimes think they perceive rainbows*.

V. *Cbrupisia from an inspection of the sun.* The image of the sun is first most lucid; after it appears red, yellow, blue; then becomes blackish, and vanishes.

VI. *Cbrupisia from a permanent impression.* Those who look a long time at scarlet cloth, and suddenly turn away their eyes, a long while after perceive the reddish color.

* Cel. Boyle *de Coloribus*, p. 18, and Illust. Haller *Element. Physiol.* Tom. V. p. 528.

VII. *Chrupsia nervea*, which arises from terror; the eyes see green or blue colors. In many nervous diseases patients think they see colors that do not exist, which happened lately to a nervous lady of high rank whom I lately cured.

If the cause be in the stomach, the cure requires gentle stomachic purgatives; afterwards tonics and a dry diet.

VIII. *Chrupsia from a mixture of colored rays out of the eyes*. If any one apply to his eyes glasses, one blue and the other red, and should look at the light, he will see a violet-colored flame*: so from the burning of sulphur in darkness all the bystanders appear of a pale green.

Photopsia, or a lucid Vision,

Is an affection of the eye in which the patient perceives luminous rays, ignited lines, or coruscations†.

The *proximate cause* of this lucid vision seems to be a pressure of the retina so strong, that it is similar to the pressure which the focus of natural light excites in the retina: this affection the causes exciting imaginary light explain.

The species are :

I. *Photopsia from a percussion of the eye*. The

* Janin *Beobachtungen über das Auge*, f. 88.

† Hippocrates calls it *marmaryge*.

vulgar notion of the eye striking fire expresses this idea of percussio.

II. *Photopsia from a nervous affection.* The flashes like lightning before the commencement of the tetanus, epilepsy, or other spasmodic diseases, are referred to this affection.

The *cure* consists in removing the causes.

III. *Photopsia from a congestion of blood in the retina or optic nerve:* hence from coughs, vomiting, vertigo, before an amaurosis or apoplexy, this light is observed; from obstructed menses or hæmorrhoids it has likewise arisen.

The *cure* requires venæsection, purges, revulsion, and, externally, cold water.

IV. *Photopsia from working on minute objects:* hence minute needlework or continued lucubrations produce this effect. This species seems to arise from sanguineous congestion: such minute or long-continued work irritates the eye, and irritation attracts an accumulation of fluid.

The *cure* is the same as the last mentioned.

V. *Photopsia from nightly watching.* Writers affirm, experiencing these vivid imaginary sparklings of light, that they have remained sufficiently strong to see objects*.

* *Si hæc pars historie vera est, says Illust. Haller.*

VI. *Photopsia from tears.* Those whose eyes are moistened with tears see lucid rays, because the rays are first bent in the tears before they pass the cornea.

This species, by drying up the tears, vanishes.

Strabismus, or Squinting,

Is an affection of the eye by which the patient sees objects in an oblique manner, from the axis of vision being distorted*.

This distortion or squinting of the eye is upwards, downwards, outwards, or inwards; in one or both eyes it is observed; or the distortion of the eyes is unequal, so that one looks towards the earth, the other towards the sky.

The effect of squinting is not only deformity of the eyes, but occasions also a more debilitated vision in examining distant objects, and *diplopia*, especially on the commencement of the distortion.

The species of distortion or squinting are :

1. *Strabismus of children newly born.* All infants, immediately after birth, distort their eyes; but in time they observe objects more distinctly with both eyes in a straight direction†.

* Cel. Buffon *sur la Cause du Strabisme ou des yeux Louches*, in *Mem. de l'Acad. des Sciences*, 1743.

† Cel. Petit *Dissert. sur la Vue des Enfans*, in *Mem. de l'Acad. de Paris*, 1727.

II. *Strabismus*, or *squinting*, from a depraved custom in infants by looking at two objects together. Thus an infant in the cradle, placed between two objects, which he both esteems, if on one side, for example, a glass or window, and on the other side he looks perpetually at the nurse, easily he becomes affected with a *strabismus*, or an oblique distorted vision.

The *cure* requires that the sound eye, for many months, should be bound with linen, if one eye alone be affected; but if both eyes labor under a *strabismus*, then for some days the right eye alone, and for some days the left alone, ought to be bandaged: so the naked eye, by this simple remedy, gradually accustoms itself to perform vision in a direct line.

III. *Strabismus* from a distortion of one muscle of the bulb of the eye. Infants who have a wart or other excrescence on the nose, with force perpetually distort the eye, for this deformity they attempt to inspect, by which they become gradually squinters.

The *cure* requires bracers externally, as cold bathing, lotions of the tonic kind, and tubes so fitted as to oblige the patient to view every thing in a straight direction by means of a small aperture, which gradually forces the eye that the pupil may be exactly parallel to the
aperture

aperture in the center of the tube, fixed on as spectacles.

IV. *Strabismus from an amblyopia or myopia of one eye.* Thus if the left eye sees not above half a foot, and the right above a foot, then we accustom ourselves to view objects with the one right sound eye, and neglect the use of the left or weaker eye: the same is observed in men who labor with a blindness of one eye, for the blind eye diverges from the sound eye. In both eyes persons are blind, in both eyes the strabismus is very common.

V. *Strabismus from a spasm of one muscle of the eye.* Then the bulb of the eye, towards the muscle affected with the contraction, is drawn and remains immobile.

The cause of this species of squinting is saburra in *prima via*, hysterical, hypochondriacal, nervous affections, or terror from a puncture of the eye.

The cure consists in the removal of the causes.

VI. *Strabismus rheumaticus*, which arises from a rheumatic affection of some one muscle of the globe of the eye.

It is known by a rheumatic pain while the bulb is moving in the orbit.

It is cured by antirheumatic remedies; in

plethora by evacuants, antimonial, &c., or by tonics in relaxation.

VII. *Strabismus*, or *squinting*, from a *palsy* of *one muscle of the bulb*. Thus the antagonist muscle being stronger contracted on the opposite side, the eye becomes distorted. If all the muscles of the globe become paralytic, then the bulb remains immoveable, and does not correspond with the motions of the sound eye.

The *causes* of this paralysis or palsy are, contusions of the eye, incipient apoplexy, preceding epilepsy, which sometimes leave a palsy; a wound of the ocular nerve that proceeds to the muscles.

The *cure* requires antiparalytic remedies, already recommended in the former part of this work, the electric spark or stream, and nervous antispasmodics, &c.; but above all, if possible, the removal of the original causes.

VIII. *Strabismus* from *immobility of one bulb*. Thus the immoveable globe does not correspond in action with the sound bulb.

The *causes* that render a bulb immoveable are, concretion of the orbit from a suppuration or consumption, of the orbital adeps or fat, or tumors, whether ossaceous or cystic, which press the bulb to the side. A long rest from action of
the

the muscles which move the orbit, by which the eye becomes firmly bound*.

The *cure* requires the removal of the cause; but if that be impossible, the cure is likewise impossible.

ix. *Strabismus endemicus*. Great numbers of the inhabitants in equinoctial Asia are said to be strabones and nyctalopes: these, in the day, shew the white of the eye only, the pupil under the eyelids being hid, lest the rays of the sun, reflecting strongly on the sand, should injure the eyes, or create uneasy sensations. When I was at *Pensacola* in 1764, surgeon of the King's packet called the Grenville, I remember the bright white sand along that coast so affected my eyes, and heated my body in walking, that I could scarce open the former, or bear the heat of the latter,

x. *Strabismus symptomaticus*, or *symptomatic squinting*, which is a symptom of the *hydrocephalus internus*, or watery head, epilepsy, tetanus, and of death.

* Whoever would wish to comprehend the rational causes of convulsions, rigidity and immobility of muscles, apoplexy, palsy, &c., may consult my Treatise on hysterical, nervous Diseases, where these disorders are explained in a new manner, from actual appearances in dissections, and not from visionary hypotheses.

All

All these, in general, are not only incurable, but fatal.

There is likewise a squinting that is acquired amongst children by imitation of those who squint.

The *cure* consists in correcting this mimicry disposition early, or it may degenerate into an habitual and incurable strabismus or squinting.

I have prevented children from confirming this disorder by making them look in a direct line through small apertures : this method will likewise cure several species of strabismus, if long continued. The children should likewise be removed from those they imitate.

Lusctas, or Oblique Vision, •

Is an affection of the eye in which the patient not in a direct, but in an oblique line only, views objects.

The *lusctas* differs from squinting, for it does not distort the eye, as is the case in this latter affection.

The species of the *lusctas* are :

1. *Lusctas, or oblique vision from a speck in the middle of the cornea.* The rays of light being impeded in the center in their passage to the crystalline, the patient is obliged to view objects in an oblique manner.

The

The *cure* requires the removal of the impediment. See *macula corneæ*.

II. *Luscitas from an oblique situation of the crystalline lens.* In this case the rays of light are broken by the oblique crystalline lens: hence not in the middle of the retina, but on the side, the rays fall, so that the patient luscitates or sees obliquely.

The *causes* why the crystalline changes its seat are, a bad conformation, a wound of the capsula or of the *processus ciliaris*, commotion of the head or eye.

The *diagnostic symptom* of this disease is, that the image looking into the pupil of the eye is represented, not in the middle, but laterally in the eye of the diseased person.

The *cure* is impossible; for it is uncertain whether the removal of the lens by extraction would remedy the evil. With me it would not require a moment's determination whether that operation should be performed on this occasion; I consider it not only extremely doubtful and cruel, but hazardous and injurious.

III. *Luscitas from a lateral situation of the pupil.* In this case the eye and face is turned to the side to see objects, that the rays may fall in laterally.

The *cure* is impossible.

IV. *Luf-*

IV. *Luscitas* from an insensibility of the point of sight in the retina. If the middle of the retina be insensile, then the perception of objects is obscure, or objects are not seen in a direct line, but in an oblique situation they are discerned.

The cure is either impossible, or requires the treatment for the *partial amaurosis*.

V. *Luscitas* from an obliquity of the cornea; for this directs the light obliquely to the lens. Whether the lens does not reduce it to a direct line again is a question; therefore this cause of *luscitas* is doubtful*.

Diplopia, or Duplicated Vision,

Is an affection of the eye in which a person sees the same object two or three times over †.

The proximate cause is a dislocation of the axis of sight, or duplicate or a multiply image in the retina of one eye.

The species of this disorder are :

1. *Diplopia* from squinting. If the image of one object fall in the same part of the retina

* Cel. Professor Richter saw the cornea in one place tubercle, yet the patient did not luscitate. See *Von der Aufziehung der graven Staars*, f. 180.

† Cel. Klinke *Dissert. de Diplopia*, Goett. 1774.

of both eyes we see a single object, because it excites the same idea in both eyes ; but if from *strabismus* one eye is distorted from the axis of sight, then the image of the object in the sound eye falls in the middle of the retina in the distorted eye towards the side of the middle of the retina : hence from this unequal sensation two ideas of the image are excited, from whence we see objects twice. As the *strabones*, for the most part, have one eye weaker than the other, hence they are accustomed to see chiefly with the strongest eye, and the distorted, weak eye is neglected ; so that the sensation of a distinct image in the sound eye obscures the weaker image in the debilitated eye, that persons who squint are no longer affected with the *diplopia*.

The cure of the *diplopia* requires the removal of the *strabismus*, which is not always practicable.

II. *Diplopia from a pressure of the eye.* It is very remarkable, by experiment, that we see an object double if with a finger we press the eye from the side. The same is likewise observed if the eye be pressed by an exostosis or other intraorbital tumor. The reason is, that the pressed eye perceives the image in another place to that in which it is discerned by the sound eye.

The

The *cure* requires the removal of the pressing tumor.

III. *Diplopia from a concretion of the eyelid.*

If we pierce a card with a needle in two places, so that the perforations are not more distant from one another than the diameter of the pupil, if we apply the card to one eye, the other closed, and look at the flame of a candle in a certain distance, that flame appears double; if there be three perforations, the flame appears triplicate. If, therefore, the eyelids be closed, growing together, so as to leave the interstices of the eyelashes open, many openings pervious to light remain; and it is not surprising that such persons see objects three or four times repeated.

The *cure* requires the division of the eyelids. See *anchyloblepharon*.

IV. *Diplopia from tears.* If the cilia be moistened with tears, many aqueous lenses are formed; from these multiplied lenses objects are multiplied.

The *cure* requires the absterfion of the tears.

V. *Diplopia from a multiplied crystalline lens;* thus two focuses are formed, which make on the retina, a double image, &c., as we are used to see through a polygon glass.

The

The *cure* requires the extraction of the crystalline; but this is a doubtful operation. Whether a polyedric cornea produces a diplopia is doubtful; but such an instance would be incurable.

VI. *Diplopia from a double pupil in one eye, which passes a double focus to the retina* *.

It is an incurable disease.

VII. *Diplopia from a preternatural seat of the pupil.* In this case the image of the rays in divers places of the retina is depicted.

It is incurable.

VIII. *Diplopia from the lens moved from its seat.* In this case also there is a different focus in the diseased eye.

The *cure* consists in the extraction of the lens; for this being luxated, in a little time becomes a cataract.

IX. *Diplopia from a partial cataract,* in which the lens is opaque in some part. The focus seems to be divided in the lens from opacity.

Extracting the lens is the only *cure*.

* Cl. Reghellini *lettera chirurgica sopra l'offesa della vista in una donna, consistente nec radoppiamento degli oggetti, seguita dopo la depressione della cataratta.* Venez. 1749. — A case is given of multiplied pupils not producing diplopia. See Cl. Janin and Cel. Klincke.

x. *Diplopia myopum*. The reason of this is not easy to discover, unless we assign as a reason the junction of the myops with a *polyedronic lens*.

xi. *Diplopia nervea*, which arises from an idiopathic or symptomatic affection of the optic nerve; as from terror, saburra in the stomach, poison taken, drunkenness, contusion of the head, of the eyelids, or eyes; from apoplexy, or in *articulo mortis*; from hysteric or hypochondriacal affections.

The *cure* consists in removing the causes. Externally, the frontal nerve or other parts may be rubbed with Hoffman's anodyne mineral liquor, &c. Internally, remedies may be prescribed according to circumstances.

OBSER-

OBSERVATIONS *on the Use and Application*
of SPECTACLES *and other GLASSES for*
the DEFECTS of VISION.

PROPER spectacles are necessary to rectify defects of vision, which defects either originate from a peculiarity in the figure of the eye, or advanced age.

Preternatural convexity of the eye. This occasions persons to be near sighted.

In this disorder, or defect, concave spectacles are useful ; and if the eyes be weak, the glasses may be of a green color.

Preternatural flatness of the eye. This occasions too distant a sight.

It is corrected by convex glasses or spectacles.

The doctrines on which these distinctions are founded are agreeable to the principles of optics.

Convex glasses are always recommended after couching or extraction of the cataract.

There have been instances of patients being near sighted from an apparent convexity, who have been obliged to use convex glasses of a short focus. This is a phenomenon contrary to the laws of optics, and not yet accounted

for. I have never had an opportunity of examining such eyes after death *.

People should be cautious in the choice of glasses, and not use them unless absolutely necessary; they should be particularly adapted to the figure of the eye. Instances have often happened, where, by using glasses more convex than the eyes required in the early time of life, in a more advanced age spectacles have become useless.

On the Use of Glasses called Preservers.

When vision becomes indistinct or imperfect, without any apparent disease, the glasses called preservers are frequently useful: the focus of these glasses is generally from fifty-eight to thirty inches.

The criterion by which we may know that such glasses are necessary, is, if when we look at small objects, such as reading the newspaper, we are obliged to place the paper more than twelve or fifteen inches from the eye.

On Green Glasses.

It may be observed that crown glass, which is of a greenish hue, refracts the rays of light

* A person formerly applied to me who had a convexity of the cornea, that formed nearly a conic point like the top of a sugar loaf, which no glasses could remedy. This remarkable case happened from the force of crying loud in a hard labor.

with

with an agreeable shade, and does not cause those disagreeable sensations which are produced from the pure white flint glass; for which reason, in all weak eyes, the dyed glass is exceedingly useful, but the green in particular.

A young lady, from too early use of glasses, which were too convex, being intent upon performing a fine piece of needlework, produced very painful effects in her eyes, and a great discharge. Afterwards this lady used spectacles of a faint green shade with considerable advantage*.

On Parallel Glasses.

Those persons, the figure of whose eyes is not defective, and who find that the rays of a strong light affect their eyes with a painful sensation, should use parallel glasses of a green color.

It may be observed, that those who work on minute objects, such as watchmakers, &c., use these glasses, adapted to the figure of their eyes, very early in life, without any injury.

On the Absurdity of supposing Glasses can be adapted to the Age of Persons.

There has been a prejudice prevailing that glasses may be adapted to the age of persons;

* Persons should not buy glasses of pedlers, but of opticians of character.

but this is absurd, as the judicious application of glasses should depend on the figure of the eye, which manifestly varies in almost every person.

It is remarkable that persons who have black eyes require glasses earlier in life than those whose eyes are gray or blue; and it rarely happens that persons with dark eyes are near sighted; their eyes have not that convexity which is frequently seen in the gray or blue: these, from their convexity, being commonly near-sighted.

The reason that the nearsighted in the early part of life see small objects more distinct, and at a greater distance, as they advance in years, is owing to the eyes becoming flatter; so that those who have defects early in life are amply compensated by having a clearer and distinct vision in old age.

Those persons who have their eyes neither too convex nor too flat may be considered to have the strongest and most durable eyes; in such no methods whatever ought to be applied to assist vision, unless requisite from the most absolute necessity. In all other cases neither fashion nor fancy should guide; and we should never have recourse to the use of glasses until some defect in vision justifies our attempts to obtain relief.

The most general causes of a defect in vision
are

are owing to intense study, particularly by candlelight,

The working fine needlework.

To too close an attention to our modern amusement, cards.

To excessive grief, and frequent shedding of tears. From humid air.

To sudden cold air.

To a false light, as in some of our counting-houses in the city.

From frequently riding in a coach when the glasses are up.

From a dilatation and contraction of the pupil from various causes*.

From an alteration in the color of the crystalline lens, which, though of a light color and transparent in youth, becomes gradually yellow as persons advance in years.

From too strong light.

From the too early use of improper glasses.

From intemperance, or drinking large draughts, and numerous other causes.

It is, therefore, the physician's or surgeon's duty to be clear in the investigation of the causes that impede vision, and to recommend the most probable and rational methods of preventing or curing the impediments.

* A dilatation sometimes happens from the palsy, and I have known instances of a contracted pupil causing blindness from too close an attention to fine needlework.

A Species of Spectacles has been recommended by the late Dr. Benjamin Franklin in a Letter to my worthy Friend, George Whatley, Esq. Treasurer to the Foundling Hospital. The following is an Extract from Dr. Franklin's Letter :

“ BY Mr. *****’s saying that my double
 “ spectacles can only serve particular eyes, I
 “ doubt he has not been rightly informed of
 “ their construction. I imagine it will be
 “ found pretty generally true, that the same
 “ convexity of glass through which a man sees
 “ clearest and best, at the distance proper for
 “ reading, is not the best for greater distances;
 “ I, therefore, had formerly two pair of spec-
 “ tacles, which I shifted occasionally; as in
 “ travelling I sometimes read, and often want-
 “ ed to regard the prospects. Finding the
 “ change troublesome, and not always suffi-
 “ ciently ready, I had the glasses cut, and half
 “ of each kind associated in the same circle.

“ By this means, as I wear my spectacles
 “ constantly, I have only to move my eyes up
 “ or down, as I want to see distinctly, far or
 “ near, the proper glasses being always ready.
 “ This I find more particularly convenient since
 “ my being in France; the glasses that serve
 “ me best at table to see what I eat not being
 “ the

“ the best to see the faces of those on the other
 “ side of the table who speak to me ; and when
 “ one’s ears are not well accustomed to the
 “ sounds of a language, a sight of the move-
 “ ments in the features of him that speaks
 “ helps to explain ; so that I understand French
 “ better by the help of my spectacles *.”

THE numerous diseases of the eyelids, eyes, their causes, and rational treatment, drawn from anatomy, physiological reasoning, and above thirty years practical experience, are now concluded. Many prejudices and errors are exposed : all the observations and improvements I have been able to make, without the least reservation, are communicated.

If other regular practitioners attend to the information contained in these pages, and ardently engage in attempting farther improvements, the disorders of the eyes will not be left to the direction of itinerant oculists, nor to the injurious treatment of ignorant pretenders.

Much has been affected, but much more is requisite ; for the labors and observations of

* I have ordered some of these spectacles to be made by Mr. Bemfleet in Saville Passage, near my house, and have recommended their trial to several people, by whom they are highly approved.

many

many artists are still necessary to advance the curative art to a greater degree of perfection. This can only be expected from the industrious ; for by industry and perseverance in detecting error, and a sincere intention of alleviating or removing the miseries incident to human nature, men are not satisfied with present knowledge, but actually engage in discoveries more useful : by such attempts the art has acquired its present respectable advancement to a greater degree of perfection than our ancestors ever suggested. It is by such means, when united with professional unanimity and candor, that future discoveries will promote the cause of humanity, tend to public utility, and ultimately elevate the dignity of medicine.

THE END.

11. 10. 11.

